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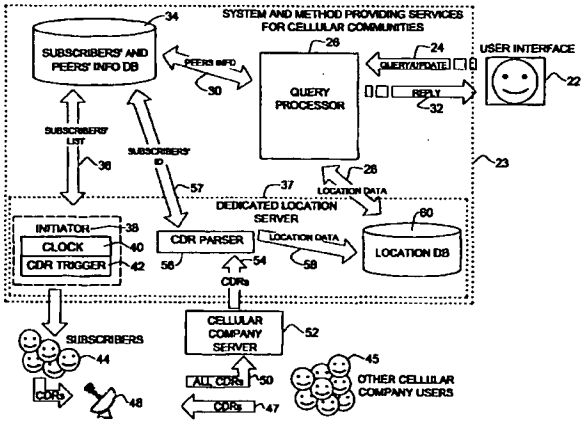

(57) Abstract: A communication system for determining the location of users and for further using the users location information for the generation and transmission of communication data required by a plurality of users sharing common interests. The system includes a wireless communication network and a plurality of user terminals having a user interface providing wireless communication capabilities through the wireless communication network. Each terminal is configured to generate a query and for further transmission of the query to a query processor apparatus. The user terminal is further configured to receive from the query apparatus query results and providing them as an output. The query processor apparatus being responsive to the query for processing the query results on the basis of information regarding user's location provided from a user location device that coupled to data communication bus coupled to a central processing unit. The central processing unit delivers, through the data bus, communication data stream that include user's location data. The user location device is configured to extract the user location data.

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SYSTEM AND METHOD FOR THE PROVISION OF SERVICES FOR COMMUNITIES BASED ON CELLULAR PHONES AND MOBILE TERMINALS

FIELD AND BACKGROUND OF THE INVENTION

The present invention relates generally to mobile computer terminals, PDA and cellular phone systems and, in particular, to location related services available to cellular communities.

In order to understand the field of the invention, one should be familiar with general background regarding the Internet, virtual communities, and New Media.

Many experts see "New Media" as the future of electronic entertainment. By "New Media" people generally mean the Internet and interactive television. According to Don Tapscott, author of the "Digital Economy" and "Growing up Digital", the evolution of New Media progresses through three stages: the information stage, the community stage and the gaming stage.

The information stage dominates the early days of New Media. Articles, news, academic papers and general info were the first items published as static contents via the Internet. However, the medium qualities, and especially its

interactive potential, enabled more complex uses. Bulletin Board Services (BBSs), where users could publish information and get other users' responses, were one of the first interactive contents. Newsgroups and real time chats (IRC) are some more examples for using the interactivity ability. These services and others, based on the interactive quality, helped to develop the concept of virtual communities, which today are the dominant source to generation of interactive content. A virtual community is a community of people sharing common interests, ideas, and feelings over collaborative networks, and particularly, the web.

Nowadays, the Internet has established itself in the community stage and is in the process of developing into the games stage (with successes such as Ultima On-line, Sega Sites etc.).

Successful Internet sites (such as Geocites, Yahoo, Excite, etc.) have built large communities using community tools such as chat forums, news groups, instant messengers, etc. and expertise in community building to develop their clientele. Once these communities are established, they form a "captive audience" for future applications offered by the site owner.

Little attention has been given, yet, to the potential of cellular phones as an independent form of New Media. Cellular users represent a very large potential market. IDC estimates that there are 1,300 cellular networks worldwide and that potentially there will be one billion worldwide users in the year 2003.

In the cellular media, technology is currently in the information stage. The user can obtain information such as general news, financial information, sport results, entertainment information, and lottery results. Additional services include access to an encyclopedia and an English dictionary, arithmetic calculations, a personalized horoscope prediction, and weather forecasts worldwide (these services are available by companies as GoSMS.com and Sonera). To date, some companies have started offering simple cellular applications for the community stage, however they do not supply a whole package of services that has a conceptual mutual theme. There are some chat companies, or cellular games, but no comprehensive solution on the level of an integrated system and method are known that offer such required cellular communication cervices for defined users' communities with location services built-in.

Present known solutions combine location data only technically, they do not design it conceptually as part of their system, but only enable a connection to an external location server designed and managed by another entity.

There has been much publicity surrounding the future migration of the Internet to wireless net in the form of cellular phones and PDA's. Many companies are working on developing applications which will enable users to "hook" into the world wide web using their cell phones or PDA's in the same manner in which they use the Internet at home, while utilizing services of virtual communities as well. This approach has two drawbacks:

- It is based on the premise that the content of community tools used for developing communities on the Internet is appropriate for building communities on cellular networks; and
- It allows slow development of community-related applications, since it is dependent on the completion of the WAP protocol, available since the year 2001. Nevertheless WAP enabled communication services and cellular communication terminals are in general too expensive for teenagers, and WAP did not find its place as the leading cellular technology, as it was expected by the technology community to be. Many experts consider it as a transit technology to the next generation of protocols and networks. In addition, the use of WAP initially will enable using the application only when connected to the Internet through an ISP (during which time, the user will not be able to receive or initiate phone calls).

Internet community building tools expose the weaknesses of the cellular media. In order to be fully effective, Internet tools require high bandwidth and relatively large displays with high quality resolution. Today, the cellular media is characterized by low bandwidth, small displays and low quality display resolution.

More importantly, Internet community building tools do not fully utilize the unique attributes of the cellular media. Advantages of the cellular media include the following: it is location-based (meaning that the user can always be

located), it is always on the user and users are accustomed to paying for services (as opposed to the Internet).

Based on the above information, which emphasizes contents concept, one can focus on the factors of the suggested patent, which provides a technical solution to the discussed content approach.

There are two basic factors to this invention: the ability to locate cellular phone users, and the ability to offer unique services (especially social) to a community of cellular phone subscribers.

Various attempts have been made to execute the first factor, the ability to determine an exact location of cellular phones, for different purposes. Location of vehicles equipped with cellular phones is the most common usage of this ability. Janky et al. discuss in U.S. Pat. No. 5777580 method and apparatus for determining vehicle present location using a location determination system (LDS), such as GPS, GLONASS, Loran or an inertial navigation system, that receives LDS signals from two or more sources. An LDS signal antenna and receiver/processor, an interrogation signal (IS) receiver means and IS responder means are electrically connected and carried on the vehicle. When a vehicle trigger event occurs, a specified vehicle is broadcast and is received by the IS receiver means. The IS receiver means causes the LDS receiver/processor to obtain vehicle present location information and to provide such information for the IS responder means, for transmission to an IS contact receiver (selected based upon vehicle present location). The IS receiver means and IS responder means are independently selected to be a cellular

phone receiver, a paging signal receiver, a WAN/LAN workstation, or an Earth-satellite-Earth radio-wave link, such as ORBCOMM.SM. Optionally, the LDS receiver/processor is kept in a "sleeper" mode, to conserve power until the IS receiver receives and responds to the specified IS, or is periodically activated to update the LDS antenna present location. Presence of the LDS equipment, IS receiver means and/or IS responder means are concealed on the vehicle. In another embodiment, a trigger event sensor is positioned on the vehicle and the responder means is caused to transmit to the vehicle present location information when a vehicle trigger event occurs, such as unauthorized movement of or entry into the vehicle, or collision of the vehicle. Song, in U.S. Pat. No. 5208756 discloses a vehicle locating and navigating system operating in conjunction with a cellular telephone network. A small, hidden device located in a vehicle is activated through DTMF signals transmitted from any telephone station. Upon activation, the device determines the power at which normally transmitted control channels are received from several base stations of the network. Based upon these determinations, the device then calculates the distance between the vehicle and each of the base stations and, using triangulation or arculation, determines the location of the vehicle. The location information is transmitted through a voice synthesizer back to the telephone station from which the activation signal is received, or to a different telephone station dedicated to receive this information. The location information also is transmitted digitally to a central station where the position of the vehicle is displayed on a computer screen along with a graphical representation of a map

of the region served by the cellular telephone network. An operator at the central station can assist the vehicle's operator with navigational information or provide tracking coordinates to a tracking vehicle equipped with a similar device.

CT Motion offers location-based services by using The Cellebrity™ platform in order to locate field workers (http://www.ctmotion.co.il).

The second factor; services provided to a community of subscribers, is common in other media, and especially, the Internet. Virtual communities are a major player in the electronic entertainment industry, and as such, they offer unique services, particularly for social purposes. Internet products, such as: ICQ by IOL, and Yahoo Messenger by Yahoo! provide services for virtual communities by using the Internet online quality. Subscribers are notified when peers are online. They can send instant messages to online peers. They can have group conversations. They can leave messages on web pages they browsed at. `In all of the mentioned products, the community issue is of a primary importance.

Considering all the above, there is thus a widely recognized need for a system and a method geared and dedicated to the construction and maintenance of users' communities using mobile communication terminals. Specifically the offered solution should be tailored to address the advanced technical capabilities of modern mobile computer terminals and their communication systems in general and the cellular telephony communication media in particular.

GENERAL DESCRIPTION AND SUMMERY OF THE INVENTION

It would be highly advantageous to have a solution that enables cellular service providers to create and manage tailor-made or scope of interest oriented cellular communities using as an integral part of the service location-based or location information oriented for the generation of the required applications. The community members would preferably share other common subjects of interest, which will be stored in the service provider database. This data can be further used to facilitate direct communication between users having common interests and in most application use location based information as an integral part of facilitating such direct communication between such users.

The preferred solution should enable such services while using at least the related mobile terminal interconnecting networks, that are characterized by having low communication bandwidth.

An embodiment of the present invention described in figure 1. of the invention detailed description provides a system and method for facilitating services to communities of cellular phones subscribers, based on their location and common subjects of interest.

The present invention refers to a need of cellular phone users to locate peers in or out of their vicinity in general, with or without a reference to a particular user. In accordance with another embodiment of the present invention the cellular phone system comprises a data base of subscribers' peers list and preferences, a query processor, a sub-system providing information

regarding subscribers' location, and user interface which enables creating queries and presenting replies. When a subscriber is interested in locating a peer in his vicinity, he activates the cellular phone system through a user interface component. This initiates a relevant query, regarding location of peers. The query processor component processes the request, while using the data base component and the sub-system which provides information regarding subscribers' location. Eventually, the system provides the subscriber an output of his request through the user interface. The sub-system, providing information regarding subscribers' location, can be received alternatively by a few methods. In accordance with one embodiment of the invention, a dedicated location server system is used. The server system comprises a Call Description Record ("CDR") parser: a component which filters information regarding subscribers' ID and cell ID, including in it the user location, out of an extended call profile (this component is originally used for billing purposes). The server also comprising of a data base component that stores subscribers' ID and location information, and an initiator component, which consists of a clock and a CDR trigger. In accordance with one embodiment of the invention, when using a clock that its cycle rate can be controlled by the communication system operator, or remotely through the Internet, all according to the location accuracy required and system communication overhead constraints, the initiator initiates a CDR trigger to all subscribers. The trigger is unnoticeable by the subscribers. Following the trigger, a CDR that contains information regarding the call, is created, and is received by the cellular company server. This server

sends CDRs of subscribers, and other users of the cellular company, to the CDR parser component within one embodiment of the present invention dedicated location server. The CDR parser component filters relevant information out of the CDR (subscriber's ID and cell ID), including the users location for subscribers only, and stores it in the data base component. The result is updated information regarding the location of all system subscribers.

It should be noticed that the commonly used and a most standard mode of operation of the users location finding by the cellular communication service provider systems is the initiation of such information once for every call, usually at the beginning of the call initiation process. Such a slow location data updating rate and the related system mode of operation is note adequate as for the wide range of applications that are connected to the use of the user's location data for uses different then the user account billing for the specific call, due to location of the user during that call. For the applications connected with some if not most of the present invention embodiments the used location data is needed to be more precise and frequently updated and therefore the location measurement refresh rate should be in the order of as several minutes typical clock rate. The location updating refreshment rate, controlled by the invention CDR trigger through the CDR generating clock, can be controlled at any point of the system operation through the cellular communication control system or by using a remote control panel through the Internet as explained in the following section. The CDR fresh location data generating clock rate (cycle time) and the derived momentary user location data accuracy, may be

changed in the time range varying from seconds to hours and is limited only by the operational and data handling constraints of the specific cellular communication system used for the application.

One embodiment of the present invention system offers a wide range of applications that has a preferably but not necessarily, very specific target group – the teenagers (ages 12-25). The embodiment range of applications creates and manages a community of teens, all applications are using the same mobile community management communication system as the community operational platform and all users are connected to the same location server and database.

The teens as a general rule of behavior, are less caring and sensitive as for their privacy but demand a rich and original content. The teenagers may use the system to find the exact location of their mates, connect them either by voice or data messages, chat to them, use the location-based dating system or play multi-user location-based games.

The present invention system operates as a new medium for teens. Games can be added to the system, as well as advanced features. The teenagers focus group demands a special approach in developing applications, language of commands and operational requirements.

The following are general descriptions of control oriented applications in relation to embodiments of the present invention, wherein the ability of the invention system to create and manage a large variety of applications oriented to cellular community activities, is explained and briefly detailed.

Privacy management system:

Since location information of at least one user is given to other users in the system, a special privacy management system is be supported by its users. In that way, each user can control his filtering level in each given moment towards all the users in the system, or define a specific and different filter towards each one of the users, as he likes.

By one embodiment of the invention there are 5 basic levels of exposure, the user can control:

1. **freeze** – a special state, in which no location is available on the user. Can be defined toward all users or toward specific users. The operation of this state is easy and very accessible.
2. **mazed by** – the "mazed by" is a special list in which the user can view, at all times, all the users, which have him on their private buddy-lists (after he gave his early approval). The user can decide
3. to delete mates from this list whenever he wishes.
4. **demazed** – another virtual state which can be defined towards all the mates or specifically towards one user. This state indicates that the user has no really intension to communicate and he is in a bad mood. He can be located, however.
5. **mazed** – the default state, in which the user uses the system and would like to communicate with his old mates, or find new ones. The user can be located.

6. **crazed** – total exposure state, in which the user tells all, some or one of the other users that he is eager to communicate. Off course, in this state location is available at any time.

The invention privacy application if of course not bounded by the above offered selection of levels of exposures and may be applied in other levels and limitations of exposure.

Relative distance:

Whenever a user of the system chooses to view the list of his mates, either the known ones, which were added by him to his private buddy lists, or new anonymous mates, whom he wants to address, he could check the relative distance between him and them.

The system in accordance with one embodiment of the invention divides the user's proximity to 3 sectors:

Very close– within the nearest distance sector.

Moderate sector – within the medium distance sector.

Far sector – within the far distance sector.

This would be determined by the system by checking the locations of both users and comparing that data. Location distance and its measurement level of accuracy may be limited to the typical size of the cell area diameter in some applications, according to one embodiment of the invention. In other applications according to another embodiment of the invention it may be of improved distance measurement accuracy due to improved user location

methods used by cellular system operators. Such methods may based on triangulation techniques used for location of the user within the communication cell area. In more advanced systems, based on the use of location sensors like GPS to locate the user location in world coordinates, typical accuracy levels of 10-20 meters or better, can be achieved depending on the GPS sensor used.

A special graphic or iconic tool would represent that information to the user, either on the mobile/PDA terminal or on the web platform.

Another embodiment of the present invention is the Game club.

The Game club is the community zone of various game players using the present invention system. .

The Game club has at least the following 5 major features:

1. Find online game partners – based on location, or not.
2. Subscribe for the SMS update service – the user will receive SMS messages with info, suggestions and news about games.
3. Read game news.
4. Online chat – about games.
5. Game forums.

The invention game application selected embodiment if of course not bounded by the above offered selection of game oriented applications and the invention may be applied in other game oriented applications.

Note the difference between chat and forums: in chat users are sending messages and reading them on-line, and these messages are for the chat participants only. Forums are more like notice board - users can write longer messages and leave them for others to read, or read other users' messages.

The game club system and method application is designed to be the place for users that are interested in games, or just want to find a partner for a game (whether quick or long term). Unlike the main feature of another class games, which are designed especially for groups of old friends, this application section is for playing games against random opponents.

Every game community can be divided into two: the casual gamers, playing games when they have spare time, and the 'hardcore' gamers – spending a lot of time playing games. In the game club both can find their needs – the casual gamers can play quick games, like Trivia, chosen one or checkers, and the 'hardcore' gamers can exchange information about games and arrange groups for long term games, like role-playing games such games are presently known to the public under the generic name Dungeons and Dragons.

The Management console:

The management console is a special tool, designed to remotely create and change game parameters of the present invention game embodiments.

In such a typical application of any of the invention embodiments the game operator enters the console through the Internet communication network, using any kind of Internet communication terminal and can create and start a game and further manage the parameters of an on going game. The game operator may set all or part of the game typical operational and definitional parameters, such as number of players, location of players, etc as well as date, time, etc.

The game operator can also send SMS messages through the cellular communication network to all system users, or to all the players of the specific game.

In the management console there is also a database of all the users that played games, sorted by game name.

Every user of the present invention system may get a limited access to the management console, and then set a private game for himself or for himself and a selected group of his friends.

The advantage from the user's point of view is obvious – he can play with his friend only, and set the game according to their internal language and humor.

In some games the user can access the management console and set a private game through his handsets.

According to the present invention there is provided communication system for determining the location of users and for further using the users location information for the generation and transmission of communication data required by at least one of a plurality of users sharing common interests, comprising: (a) a wireless communication network; (b) a plurality of user terminals having a user interface providing wireless communication capabilities through said wireless communication network; each terminal is configured at least to generate a query and for further transmission of said query to a query processor

apparatus; said user terminal is further configured to receive from said query apparatus query results and providing them as an output; (c) the query processor apparatus being responsive to said query for processing said query results on the basis of at least: (i) information regarding user's location provided from a user location device that is associated with a data communication bus coupled to a central processing unit; the central processing unit delivers, through said data bus, communication data stream that include user's location data; said user location device is configured to extract said user location data; (ii) subscribers data including registered users peers list and preferences stored in a subscribers database.

According to the present invention there is provided communication method for determining the location of users and for further using the users location information for the generation and transmission of communication data required by at least one of a plurality of users sharing common interests, comprising: (a) receiving a query from a user terminal; (b) processing said query to obtain query results on the basis of at least information regarding user's location users peers list and preferences; and (c) outputting said query results to said user.

According to the present invention there is provided communication method for determining the location of users and for further using the users location information for the generation and transmission of communication data required by at least one of a plurality of users sharing common interests, comprising:(a) receiving a query from a user terminal; (b) processing said query to obtain query results on the basis of at least information regarding user's location users peers list and preferences; outputting said query results to said user; and conducting and managing a treasure hunt electronic game utilizing at least said users location.

According to the present invention there is provided communication method for determining the location of users and for further using the users location information for the generation and transmission of communication data required by at least one of a plurality of users sharing common interests, comprising: (a) receiving a query from a user terminal; (b) processing said query to obtain query results on the basis of at least information regarding user's location users peers list and preferences; (c) outputting said query results to said user; and (d) conducting and managing a mobile terminal based electronic monopoly game for purchasing and management of real estate properties game utilizing at least said users location.

GLOSSARY

The following is a glossary of some terms, commonly used names and specific applications or invention embodiment titles, which will be used in the description below:

AOA – Angle Of Arrival – A way to determine the position of a cellular phone by finding the angle of the radio waves from 3 or more antennas.

CDR – Call Description Record – A file that holds billing information on a specific action of the cellular phone.

FindExact – one embodiment of the invention for the generation of users' location data, based on information derived from the Cellular service provider billing sub-system.

GPS – Global Positioning System - A way to determine the position of a suitable item by computing the angle from 3 or more satellites.

ISP – Internet Service Provider

MexE – A cellular protocol based on Java.

Multipath positioning method – A way to determine the position of a cellular phone.

PDA - Personal Digital Assistant - A handheld device that combines computing, telephone/fax, and networking features.

Push - delivery of information that is initiated by a server rather than by the information user or users, as it usually is.

SMS - Short Message Service - A service for sending messages of up to 160 characters to, and from, mobile phones.

STK - SIM Tool Kit – A GSM protocol that enables the network to interact with the phone's SIM card.

TOA – Time Of Arrival – A way to determine the position of a cellular phone by computing the time differences of the radio wave from 3 or more antennas.

WAP - Wireless Application Protocol - a specification for a set of communication protocols to standardize the way that wireless devices can be used for Internet access.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is herein described, by way of example only, with reference to the accompanying drawings, wherein:

FIG. 1 is a schematic diagram of the system illustrating also the related method steps for providing services for cellular communities, in accordance with the teachings of one embodiment the present invention;

FIG. 2 is a flow diagram of the method for providing services for cellular communities, in accordance with one embodiment of the present invention;

FIG. 3 is a flow diagram of a method for operating the dedicated location server, in accordance with one embodiment of the present invention;

FIG 4 is a flow diagram of a method for processing data by the query processor component, within the system, in accordance with one embodiment of the present invention;

FIG 5 is a flow diagram of a method for CDR parsing by the CDR parser component, within the dedicated location server, in accordance with one embodiment of the present invention.

FIG. 6 is a schematic diagram of the system illustrating also the related method steps for providing services for cellular communities implementing the findExact enhancement to the system, in accordance with one embodiment of the present invention.

FIG. 7 illustrates in a schematic block diagram the present invention one embodiment of the location server and its connection structure to the cellular service provider central communication control system.

FIG. 8 is a block diagram describing one embodiment of the present invention system and method related to the management of a specific community zone of a teenagers.

FIG. 9 is a block diagram describing another application of the present invention system, focused on the applications related to Chats and forums, in accordance with one embodiment of the present invention.

FIG. 10 illustrates another application of the present invention system that is hereby is defined as the T-hunt (treasure hunt), which is a location based treasure hunting game for mobile terminal users, in accordance with one embodiment of the present invention.

FIG. 11 illustrates in a block diagram another application of the present invention system - this application is a mobile terminal based electronic monopoly location based game, in accordance with one embodiment of the present invention.

FIG. 12 illustrates in a block diagram another family of applications of the present invention system - this common element to the games in this game family is that they are role playing adventure games, wherein the dynamically controlled and monitored location of the player or players, is an essential

element in the conduction of the game, in accordance with one or more embodiments of the present invention.

Fig. 13 illustrates graphically the console panel of the treasure hunt game in accordance with one embodiment of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention is of mobile and portable computer terminals and cellular phone based systems, which provides location-based services to mobile users of cellular communities and alike. Specifically, the present invention can be used to facilitate cellular phone users information on their whereabouts and enabling the connection with their peers, within or out of the user vicinity, on a basis of common interests.

The principles and operation of the present invention system and method according to the present invention may be better understood with reference to the drawings and the accompanying description.

Referring now to the drawings, Figure 1 illustrates a schematic block diagram of one embodiment of a system and method providing services for cellular communities. A subscriber of the system initiates a request **24** for information or details updating, via a user interface **22**. The system operation sequence starts when a query/update request **24** is sent to the system **23**, and is

further processed by the query processor component **26**. In order to execute the operation, the query processor **26** access subscribers' and peers' info database **34** and location database **60**. When the process of the data is terminated, the query processor **26** sends a reply **32** to the subscriber, via the user interface **22**. System block diagram **23** illustrates one possible embodiment solution of an integration of a dedicated server subsystem **37** for the generation of continuously updated users' location data. Such users' location data can be also received from other location generation sources, such as: AOA, GPS, STK, WAP, and more. System 23 describes in further details the composing modules of sub system **37**, in this embodiment a dedicated location server **37** is used. The main advantage of this location server **37** and its operational mode lies in the fact that in the normal way of operation of a cellular communication system center the users' location information is generated at the beginning of each user call, it is then extracted and stored in the core of the communication server, being one example of a central processing unit. Access to this information is problematic from operational and security reasons for third party specific application service providers. In this embodiment detailed herewith the users' location data is extracted in a different way that does not need any access to, or interfere with the cellular communication system center. The location server **37** includes 3 modules: an initiator **38**, a CDR parser **56**, and location data base **60**. The initiator module **38** includes 2 sub-module elements: a clock **40**, and a CDR trigger **42**. The clock **40** activates the CDR trigger **42** repeatedly. The trigger **42**, which is a data packet, is sent to all system **23** subscribers' cellular

phones **44** through the cellular communication system main server **52** and antenna **48.** (for the simplicity of description drawing 1 shows CDR trigger **42** output directly transmitted to the subscribers **44)** . List of subscribers **36** is accessible from the subscribers and peer's info database **34.** When subscribers **44** receive the trigger **42** initiated by the initiator module **38** and sent to them through the cellular company server **52** through the antenna unit **48,** they react by sending a CDR message **50,** back to the cellular server **52.** The improved user location information is required to update frequently the location of each system user, if he belongs to the monitored users' community (subscribers) and for further using this improved user's location accuracy to generate applications and games wherein the users need this improved location accuracy to participate in the development or conduction of their part in the application . In parallel one should note that as an integral part of the general cellular communication system **23** operation, subscribers **44** and other cellular phone users **45** send CDRs **47** for every action committed via the cellular phone. The triggered CDRs **46** at typical software controlled clock rates of 3-60 CDR triggers per hour and the normally and routinely generated CDRs **47,** are all collected and transmitted via the cellular phone company's antennas **48** to a cellular company server **52.** Therefore, the cellular company server **52** receives many CDRs, from different cellular phones, of the same cellular company. The server **52** sends all CDRs **54** to the dedicated location server subsystem **37** through the CDR parser component **56.** The parser **56** filters the users and handles subscribers' CDRs only, by accessing the subscribers and peers info

database **34**. For all system subscribers only, the CDR parser **56** extracts process relevant data and stores it for further use this data is also related to the continuously updated location data covering the subscriber-user ID and cell ID with its related location data **58**, all to be stored in the location database **60**. The main advantage of the mode of operation of the present invention location server **37** lies in the user cell ID data location extraction operational mode, wherein this data is extracted by listening to the data stream exchanged between the cellular company server **52** and its billing server (shown in figure 7. Following) carried on data bus **54**, thus without having to access the internal core of cellular server **52**, an operational demand practically rejected by most cellular communication service operators.

Figure **2** illustrates a flow-chart diagram the method steps for providing information services for cellular communities subscribers according to one embodiment of the present invention. In block **25**, a system subscriber initiates a request in order to locate a peer or to update personal preferences in the system via the user interface. In block **27**, the system processes the request while using subscribers and location data, by accessing subscribers' and peers' info data base **34**, and location data base **60**. In block **33**, When processing stage is completed, the system provides relevant information to the subscriber.

Figure **3**, is a flow-chart diagram describing the method steps for operating the dedicated location server to generate updated subscribers' location data. Numbers of all the system functional modules participating in this process are as described in figure 1. In block **39**, a clock **40** activates a

CDR trigger **42** repeatedly having software controlled varying clock rates of typical 3-60 interruptions per hour. That trigger frequency can be even of higher or lower rates, depending upon the cellular communication system data flow overhead constraints. In block **43**, the CDR trigger **42**, which creates a CDR, is sent to all system subscribers, by accessing the subscribers' list from the subscribers' and peers' info data base **34**. In block **49**, cellular phones, which receive the CDR trigger **42**, send a CDR in return, to the cellular company server **52**. In block **53**, CDRs from all cellular phone company users are sent to the system CDR parser **56**. In block **55**, the CDR parser **56** parses the subscribers' CDRs only and extracts their present location for further use in specific interaction applications between these subscribers and between them and other users. In block **57**, the extracted location information is stored for all system subscribers, in the location database **60**.

Figure **4** is a flow diagram, which illustrates the method for processing data by the query processor component within the system. In block **70**, the system receives a request for a query or for an update from a subscriber, it is first directed to the Query processor **26**. In block **72**, the query processor **26** decodes the request. In block **76**, the processor **26** identifies the user interface type (Internet platform, STK, SMS, WAP, voice mail platform, MexE, voice recognition, packet data platform). In block **76**, the query processor **26** executes the requested commands by accessing the subscribers' and peers' info database **34** and the location database **60**. Eventually, in block **78**, the query processor sends back reply to the request initiator.

Figure 5 is a flow-chart diagram illustrating the method steps for the CDR parsing by the CDR parser **56** component as executed within the dedicated location server **37**. In block **80**, the CDR parser **56** receives a CDR from a cellular company server **52**. In block **82**, the parser searches for user ID data within the CDR. In block **84**, the parser filters out non-subscriber users and handles subscribers' CDRs only, by accessing the subscribers' and peers' info database. If the user is not a subscriber as indicated in step **86**, the CDR parser aborts task, as shown in block **88**. If the user is a subscriber as indicated in step **90**, the CDR parser searches for cell ID data within the CDR, as shown in block **92**. In block **94**, the parser stores for further use all the related subscribers' ID and the users' present position cell ID in the location database **60**.

Figure **6** illustrates in a block diagram the findExact enhancement subsystem in accordance with another embodiment of the invention, which enables improved accuracy and faster location data generation by the invention system. Figure 6 block diagram describes another embodiment of the present invention system and its related operational method, it is similar to Figure 1, but with a single addition: from the Query processor **26** a FindExact trigger is sent to the Initiator **38**. The data generated from this trigger, including momentary location data of the system users, is streamed through the communication channel **50** and is then collected at location DB **60** and further managed by the Query processor **26**. The Query processor **26** waits for the required time duration it estimates to take the data to be streamed through the

data channels **30** and stored in database **60,** or further streamed through communication data channel **32** to the user interface **22.**

Figure 7 illustrates in a schematic block diagram the present invention preferred embodiment regarding the location server **37,** wherein a dedicated solution is offered regarding the extraction of the localization data and the related location server **37** connection structure to the cellular service provider communication system. This preferred embodiment enables simple extraction and generation of the user's location data by implementing an extraction process based on location server **37** dedicated logic component **108** listening to the data communication link between the service provider core system **104** and its billing sub-system **106.** In this preferred embodiment the extraction of the location information is done by the location server **37** directly from the cellular service provider communication management system. The location server **37** extracts the users' location data directly from the Billing records. The need to intervene with the integrated structure of the carrier system core in order to extract the location data is thus obviated.

The advantage of this location data extraction method is the low exposure amount by which the cellular service provider internal system and network **104** gets exposed to a 3rd side entity. Cellular service providers request location based applications to refrain from penetrating the inner layers of their communication control network. Using extracted location data from the billing communication traffic is therefore a preferred solution due to the fact that the billing records on the other hand are usually sent and can be easily accessed out

of the Cellular service providers core system **104**, and they include in the transferred data the location information required by the location server **37**. Figure 7 is a block diagram demonstrating the present invention one preferred embodiment of generating location data wherein the location server **37** is hooked to the service provider system **100**, while listening and extracting location data transferred on data bus **102**, connecting the service provider core control sub-system **104** to the billing sub-system **106**, through the use of the location listener module/component **108**, which is a functional module of the CDR parser unit **56** of figure 1. The general data communication traffic on the data bus **102** contains also data flow of CDR location oriented information. This information is easily accessible to the location server **37** through the location listener module/component **108** and it does not interfere in any way with the regular and normal way of operation of the service provider central system **100**. This solution is a preferred location data extraction method related to other known location data extraction finding methods due to the fact that the CDR data is regularly accumulated and transferred from the service provider core control sub-system **104** to the billing module **106** for various billing requirements, therefore it can be easily accessed. This preferred solution does not require the connection of the location server to the cellular service provider communication management system core. Consequently this solution therefore does not require, like other prior art solutions, that the service provider system core will be directly accessed by an external system for the extraction and processing of location data. Such a prior art solutions require the hazardous

direct coupling of a third party location listener and location sever to the service provider highest security zone that includes the cellular service provider protected central communication system server core.

The following figure descriptions are covering, in a non limiting way, a limited number out of a large number of embodiments with application oriented system structures and their related way of operation, regarding the present invention system, wherein the system is implemented for the conduction and management of various specific cellular communities activities while integrating the users' location data for the best conduction of such community of users activities. It is also to be understood that the system structures embodiments described in figures 1-7 are only a limited number of the present invention system possible structures and configurations.

Figure 8 is a block diagram describing one embodiment of the present invention system and method related to the location data derived management of a specific community zone of a teenagers, implementing a preferred application of the present invention system. In this application the users can meet other users, **based on their location**, chat to them, exchange information and date. This community has two major sections. The first is a **dating system** described in this section under figure 8, and the second is a section for **chat-rooms** and **forums** described under the following figure 9.

Two symbolic names characterize the participants in such cellular based communities:

(a) Maze is where the user has his close buddies, which he knows their phone numbers.

(b) Community is where the user meets new anonymous friends who can take any identity they like, including a false one.

One of the main differences is that in the Maze exact location is given, and in the Community for natural reasons – only relative distance is given, in order to protect the privacy of the user.

This community is different from the buddy-list section of the system (see above summery of the invention section). Here, the user meets mostly new anonymous mates and not those, which he added to his main list by typing in their phone numbers.

Dating system - This is a sophisticated dating mechanism; whereby users define a profile of themselves by answering a questionnaire, go out searching for users who fit this profile, and then can add them to a special friends-list. The location data of such system users is used as an important parameter in the creation of matching criteria among these users.

The questionnaire is divided in two parts: a. some basic questions defining the user's gender, age, zodiac, obsessions etc. b. A much more detailed psychological-oriented questionnaire that defines the user's social type , that step is demonstrated in action **1.**

Those questions, which are original and not obvious, let the system figure out the user's qualities and likes in an indirect and smart way.

Another set of user defining parameters tool is included in action **2** which is an empty data filling space the user can use to describe his motto in life or any information he would like to share with other users.

The personal picture action **3** is a picture the user can choose as another information source of his personality. This picture can be chosen from a gallery of existing pictures or icons, or brought by the user and scanned into the system.

The user can view other users' profiles in the lists of new anonymous users, which are active at present time. Even though he cannot get the exact location of an anonymous user, he can always get the relative distance of that user from his own present location zone. More than that, the system includes a special matching apparatus a user can apply to and get an accurate match in action **4**, which is based on the combination of the users' predefined profiles and their locations derived from system database server **34**.

If the user finds another anonymous user he would like to keep in touch with, he can add him to a special list – "active friend" marked as action **5**, which is different from his main buddy-list of mates. This special list is specified only for the specific community, and can be viewed only when the user enters that section of the system. This list also includes information of the relative distances of the anonymous users from the user's zone.

In the actions **7,8, 9** – The location server **37** gathers information concerning the location of all subscribers of the system through the network. Location server holds information of the user's location (actin **8**), as well as all the other users in the community section, action **7**.

This information is transferred by the location server **37** to the system server **52** and database and is updated there , action **9**.

In actions **5,6** - If the user finds another anonymous user he would like to keep in touch with, he can add him to a special list ("active friends"), marked as action **5**, which is different from his main buddy-list of mates (see summary above). This special list is specified only for the specific community, and can be viewed only when the user enters that section of the system. This list also includes information of the relative distances of the anonymous users from the user's zone, information gathered in the database of the system and is presented to the user on his handset – in action **6.**

The personal picture, in action **3** is a picture the user can choose as another information source of his personality. This picture can be chosen from a gallery of existing pictures or icons, or brought by the user and scanned into the system.

The type questionnaires action **1**, the free note **2** and the personal picture **3** all combined, create the full profile of a user, which is saved in the system server **34** and database in a personal profile creation and storage action **10.**

Figure 9 is a block diagram describing another embodiment of a non limiting structure and operational mode application of the present invention system focused on the applications related to **Chats and forums**.

The other section of the community management application, described in figure 8 is the chat. Here, here the user can find chat rooms divided to content subjects such as movies, music, sports, sex etc – step **11**.

Another feature of the chat system would be local rooms, step **12**, which host users located in the same zone.

The user can decide either to join an existing room or to create his own room with the approval of the network's operator, step **13**. When entering a room, the user will be notified of the number of users, which are active at the moment in that room by step **14**.

Due to the present art common limitations of the cellular medium, each room would host limited number of users (such as 5, in a non limiting way) and if the number of attendees is greater, the room would be divided automatically to sub-rooms of the same topic.

The user can than view the profiles of other users and their relative distance from him by data extracted from the system server demonstrated by step **14**.

The user can send a one-to one SMS message to each user in the room, a one-to-some SMS message to 2 users or more, or a one-to-many SMS message to the whole room. He can always decide to leave the room and join another.

Alternative way of communications is using voice-chat, step **15**. Special chat rooms would be defined for that cause, and the attendees can speak through the system without really knowing the phone numbers of each other.

A special software module/apparatus that can be integrated to the system may allow users to exclude an intruder, i.e. a user that disturbs the communications in the room and is offensive to the other users. The module logic lies in a rule that If at least a predefined number of users decide to ignore that person, he would be excluded from the room automatically. In another version of the system, there would be a censoring artificial agent, which will identify offending words and deal with users who posted them.

In action blocks **17,18,19** – The location server **37** gathers information concerning the location of all subscribers of the system through the network. Location server **37** holds information of the user in block **18**, as well as all the other users in the community section **44**.

In action block **17** this information is transferred by the location server **37** to the system server **52** and the database in 60and is updated there, in action block **19**.

In action blocks **13+16** the user can decide either to join an existing room (blocks **11,12,15**) or to create his own new room. If so, he types in his preferred topic - step **13**. The system will send a message to the user, approving or not his suggestion for a new room (step **16**).

Growth features: As the community develops, the system database can gather much information about the users and their typical activity. This information

can be used as part of the user's profile, as long as he approves it. Such information could be, for example, the amount of usage of that user which defines his social activity level.

Another feature is special recommendations section, whereby the users add updated information of their favorite movies, music etc. That information is saved in the database. A special engine would provide each user with smart recommendations, i.e. those who were given by users of a similar profile, with a big chance of success to suit his taste.

Figure 10 illustrates another embodiment of a non limiting structure and operational mode application of the present invention system, that is defined herewith as T-hunt (treasure hunt), which is a users' location data based game for mobile terminal users. There might be invoked two versions of T-hunt: open version, for the whole community, and private version - for small groups of friends.

In order to play, the user must register for the game, by adding a special phone number to his main buddy list. When he does so, he is added to the game database. There are limited number of players per game.

The game course is the same in both versions: the game begins with a message to all the players. This message contains a riddle that directs them to a specific place in the city. In order to progress, they must reach this place, where they will get another riddle, directing them to another place.

When the user reaches the place, he uses the 'find' command on the treasure. The system locates him through location server **37**, and updates his location in the database, as demonstrated in step **201.**

The system then sends the user the next clue, but only when it identifies that the user is in the right place, step **202**.

In this way the user progresses from place to place in the city or searched area, until he reaches the last place, where he should find the treasure – and win it. The first who reaches the treasure and finds it – wins it. The game administrator at server **34** can decide that there will be more than one winner – he can set it using the management console.

The user can also detect his relative distance from the treasure using the relative distance icon – he can also change his radius Zone, and see how close he is to the treasure.

The user can also check the previous riddles he received, and check the scoreboard – in order to compare his progress to his opponents, step **203**. In the scoreboard he can see how many players are playing the game, and what is the percentage of players in each level (i.e. 70% are in the 3rd base)

Another option is to combine this game with mobile e-commerce, i.e. the user will have to pass through a chain of restaurants, or the treasure will be hidden in one of them.

The prize doesn't necessarily have to be in the 'treasure' place. The players can be asked to combine a code, or answer a question, and only if they succeed, they win the game – and will get the treasure at the producer office.

The game administrator can start and modify games through the management console. He can set the prize, write the riddles, and so on.

Users can start their own games using this management console.

When a player reaches the place, he uses the "find" command on the treasure. The system locates him on the cellular network through location server **37**, as demonstrated in block **205**. Then it updates his location in the database, as shown in step **201**. Same process is done with all other players of the game. The location server **37** locates them on the network **(step 206)** and sends the information to the data server **(step 201)**.

The system sends the next clue to players in action block **204**, only after it identifies that they have reached the right place (= the solution of the previous clue) – as demonstrated in action block **202**.

Figure 11 illustrates in a block diagram another embodiment of a non limiting structure and operational mode electronic game application of the present invention system -this application is a mobile terminal based electronic monopoly location supported game It is a location based role playing/adventure game. The idea of the game is to buy areas in the game geographic zone, e.g. the city – but only if the player is physically in this area. When a player walks in the city, he can perform a check on the place he is standing at the moment by first extracting location data from location server **37** and then executing property check by step **305**. In this check there are two options: the area is available and the player can buy it, or the area has already been bought, and the player must pay rent to the owner. After he pays the rent, he can try and take over the place – by challenging the owner to a trivia/boxing fight , step **302**. The winner gets the area.

Players can pass through bought properties without being noticed (and therefore not to pay rent) – they are noticed only when they use their phone in any way (phoning, receives call or SMS message, trying to check the area availability). Only when he does one of these actions, the system locates him and updates his location in the database **34**.

Every area has a detail card, specifying the price of the area, the average number of players going through this area per day and the rent (without and with upgrades).
The player can upgrade the properties he owns, and get extra rent for them.
The goal is to own as many areas as possible, earn money – and lead the other players to bankruptcy.

The map of the city, divided into areas, is publicized in the in the game's website, so the players will be able to check the details on the areas.
The game has a 'Hall of fame' section , step **303**, with accumulated updating data regarding the players and their profit.

Figure 12 illustrates in a block diagram another embodiment of a non limiting structure and operational mode of an electronic game application of the present invention system -this application is a location based role-playing game:
In the initial phase of this electronic game embodiment the players create their own character; define their skills and preferences, in step **401**.
In the following game steps they have a mission to complete using their adopted character.
In step **402** there will be ready-made missions that the players will be able to play, alternatively, in step **403** the players will have the tools, using the Internet as the communication network, to create their own adventures and further to publicize and conduct them with other system users.
The adventures will range from simple fighting adventures (groups of soldiers fighting in order to conquer a place, and capture the other soldiers), fantasy adventures (wizards and warriors trying to fight dragons and save their town) and detective adventures (detective tries to solve a mystery case).
The common element of all this embodiment including a family of electronic games will be the creation and conduction of adventures games that are location based. Another common game element to all this embodiment games is the demand that the players will have to move from place to place in a city, or in a defined geographic area, wherein the players will pick items and information, as in step **408** and further use their skills, information and the items they picked to interact with other players, in step **407** like talking and fighting with the other game players. In all such embodiment family of games, the players will be able to finish their mission, in more than one possible way.

The players will create the adventures using a management console which is a game management tool, supplied to the system users for the required game parameters definition and which is available to the users through a dedicated Internet web site.

The game is designed in three versions: the user playing with the whole cellular registered users community step **405**, for groups of friends, step **404** – and for one player only, step **406**.

There can be also a non-location based game embodiment version, which the players will be able to play from home.

A user will be able to invite and role-play with his friends **409**, get into an imaginary character and enjoy adventures, while wandering around in the city or a pre-defined geographic area, fighting and collaborating with other players, in step **412**.

When a player walks in the game territory, he can perform a check on the place he is standing at the moment (**step 301**). This location data is extracted from location server **37** as shown in **step 305**, and is sent to the system server and database 34 in step **309**. Same process is done with other users: the location server locates them in the city (**step 308**) and sends the updated data to the database (**309**).

In this check there are two options: the area is available and the player can buy it (**step 306**), or the area is already been bought and the player must pay rent to the owner (**step 307**). After he pays the rent, he can try and take over the place by challenging the owner to a trivia/boxing fight, step **302**.

In advanced embodiments of this family of games, the games can further implement use new technologies and developments, like: enabling voice chats during the game (GPRS), streaming sound & video, WAP graphic menus (for example, the player can choose a photo of the item he wants to use).

Figure 13 illustrates one possible control screen visualization embodiment of a non limiting image, structure and operational mode of an electronic game application of the present invention system, specifically regarding a module of a general games management console operated through a remote terminal display, preferably through the Internet network.
The functions and the look of this control console can vary and may be adapted as to the following operational, display and control tasks:

1. Start a new game
2. Change details of scheduled games
3. Cancel games
4. Currently running games
5. Send messages to all the users
6. Players database

The game administrator chooses the function he wishes to use by choosing one screen of the six available, each such screen covers the selected control function. 1. **Start a new game:**
In this control frame page the game administrator can set the parameters relevant to the game, such as:
Date
Specify an hour
Location
Number of players
The prize
Helpdesk phone number
Begin message for the players
End message for the players
Location parameters - (such as the location of the hints in T-hunt, and the names of the cells in Cellfish-monopoly).

In the "start a new game" page, the game administrator defines all the parameters required for the game. These parameters changes from game to game.

Figure 13 visualizes as an example only the image of the management console for the T-hunt game described under figure 10.

2. **Change details of scheduled games:** in this function, the game administrator can change and modify all the parameters he set in the previous section (start a new game). This function was created to enable the change of mistakes – and enable modifying games.

3. **Cancel games:** canceling scheduled games.

4. **Currently running games**: functions available on games that are currently in progress. Functions such as 'cancel the game', 'send message to all the players', and option to see the score table, the number of players – and the location of the players.

5. **Send message to all the users:** the game administrator can send SMS messages to the users, or just to the players. Moreover, he can decide more specifically to whom he sends the message, i.e. in t-hunt management console there are checkboxes that indicates the stages of the game, and the administrator can check some of the boxes, and only the players in this stage will receive the message.

6. **Players database:** in this section, all the information about the players that played the game is stored.

This information is sorted by dates or by games.

For example, the game administrator can see who played in the monopoly game that occurred between 20/4 to 30/4.

Returning to figure 13 which visualizes specifically one possible image of the control screen image application of the T-hunt embodiment of figure 10, the data entry windows and control buttons of the game operator are as to the following:

Data entry windows **510,512** and **514** are for selecting the exact date of the game.

Data entry window **518** is for selecting the hour of screen updating or start of game.

Data entry window **520** provides the location of the game.

Data entry window **522** provides the selected number of stages by which this game will be conducted through.

Data entry window **524** provides the type, or nature, of the specific treasure selected for the specific game by the game operator. Data entry window **526** provides the telephone number at the location of the game selected treasure.

Data entry window **532** provides the e-mail address for a help-desk offered to participants of the game.

Indication windows **528** and **530** provide the operator or the player with the possibility to learn if there is a phone in the place of the treasure, needed if he/she is located far from the treasure.

516 are checkboxes that indicates the stages of the game, and the administrator can check some of the boxes, and only the players in this stage will receive the message.

While the invention has been described with respect to a limited number of embodiments, it will be appreciated that many variations, modifications and other applications of the invention may be made.

In the method claims that follow, alphabetic characters used to designate claim steps are provided for convenience only and do not imply any particular order of performing the steps.

It will also be understood that the system according to the invention may be a suitably programmed computer. Likewise, the invention contemplates a computer program being readable by a computer for executing the method of the invention. The invention further contemplates a machine-readable memory tangibly embodying a program of instructions executable by the machine for executing the method of the invention.

WHAT IS CLAIMED IS

1. A communication system for determining the location of users and for further using the users location information for the generation and transmission of communication data required by at least one of a plurality of users sharing common interests, comprising:

(a) a wireless communication network;

(b) a plurality of user terminals having a user interface providing wireless communication capabilities through said wireless communication network; each terminal is configured at least to generate a query and for further transmission of said query to a query processor apparatus; said user terminal is further configured to receive from said query apparatus query results and providing them as an output;

(c) the query processor apparatus being responsive to said query for processing said query results on the basis of at least:

(i) information regarding user's location provided from a user location device that is associated with a data communication bus coupled to a central processing unit; the central processing unit delivers, through said data bus, communication data stream that

include user's location data; said user location device is configured to extract said user location data;

(ii) subscribers data including registered users peers list and preferences stored in a subscribers database.

2. the system of claim 1, wherein said query is at least one selected from the group comprising of at least, requesting information regarding at least the location of a user's group of peers, requesting information from said subscribers database on selected users and peers and updating information within the system.

3. The system of claim 1, wherein said query is originated by default preferences of the system.

4. The system of claim 1, wherein said query processor query input is including at least one location data element, selected from the group comprising of the user authentic location, other selected users authentic location and the user's selected peers authentic location.

5. The system of claim 1, wherein said query processor reply including data selected from the group of data elements

comprising of data on peers in vicinity to the system user, data on peers in vicinity to least one system user from a selected list of system users and data on peers and users in the vicinity of a certain site location.

6. The system of claim 1, wherein said query processor reply to said requesting user including the location of at least one of said user's peers.

7. The system of claim 1, wherein said database of users and their peers preferences refers to a list of personal preferences of each system user and his peers.

8. The system of claim 7, wherein said user's peers preferences refers to their fields of interests.

9. The system of claim 1, wherein said database of users and their peers preferences is including the users personal status.

10. The system of claim 1, wherein said information regarding users' location is received by the system's triggered user position request, executed through a communication procedure with the user hand-set, comprising of at least one interfacing solution

selected from the group comprising of at least; a STK and a WAP.

11. The system of claim 1, wherein said information regarding users' location in a format of a Cell Global Identity.

12. The system of claim 1, wherein said location server apparatus, further comprising:

(a) a CDR parser, filtering information received from said communication network management system regarding subscribers' ID and cell ID;

(b) a database that stores subscribers' ID and cell ID; and

(c) an initiator.

13. The system of claim 12, wherein said initiator is comprised of a clock and a CDR trigger.

14. The system of claim 12, wherein said initiator operation comprising the steps of:

(a) the clock activates the CDR trigger repeatedly; and

(b) the CDR trigger forces a CDR creation, said CDR including data determining at least a plurality of said system users location.

15. The CDR parser of claim 12 wherein its operation method comprising the steps of:

(a) receiving at least one CDR from a cellular company server;

(b) searching for user ID data within the CDR;

(c) identifying whether the user is a subscriber by accessing said subscribers database;

(d) in case the user is a subscriber, then:

(i) searching for cell ID data within the CDR; and

(ii) storing subscriber ID and cell ID in the data base; and

(e) in case the user is not a subscriber, aborting task.

16. The CDR trigger of claim 13, configured to be unnoticeable by subscribers.

17. The CDR trigger of claim 13, selected from the group comprising of; an invisible SMS message and any kind of an unnoticeable packet of data selected from the group including at least an empty packet and a dedicated packet.

18. The user interface of the system of claim 1, running on an Internet platform.

19. The user interface of the system of claim 1, based on a STK protocol.

20. The user interface of the system of claim 1, operating through a SMS communication format.

21. The user interface of the system of claim 1, based on a communication protocol selected from the group comprising of at least WAP and MexE.

22. The user interface of the system of claim 1, operating on a voice mail platform.

23. The user interface of the system of claim 1, operating through voice recognition.

24. The user interface of the system of claim 1 running on a packet data platform with text messages.

25. The system of claim 12, wherein said initiator is triggered by said query processor to activate said location server apparatus.

26. The system of claim 1, further comprising a privacy management system, wherein each user can control and define his filtering level in each given moment towards each or all other system users, said filtering level is selected from a group of filters including at least:

(i) a special state, in which no location is available on said user, said filter can be defined toward all other users or toward specific users;

(b) a special list in which said user can be viewed at all times by a group of other users, which have said user on their private buddy-lists after said user gave his preliminary approval, said user can decide to delete mates from this group whenever he wishes;

(c) a virtual state which can be defined by said user towards all the mates or specifically towards one user, this state indicates that the user has no really intention to communicate and he is in a bad mood, he can still be located if required;

(d) a default state, in which the user uses the system and would like to communicate with his old mates, or find new ones, said user can be located by all system users defined as said user mates;

(e) a total exposure state, in which the user tells all, some or one of the other users that he is eager to communicate. Off course, in this state location is available at any time.

27. The system of claim 1, wherein said information on user's location is used by said system to calculate the distance between said system users and to further categorize said distances to at least two distance classes.

28. The system of claim 27, wherein said information on user's inter-distances is used by the system to conduct and manage interaction between said users.

29. The system of claim 1, wherein said information regarding said subscribers location and said subscribers data is further used to manage dating services between said subscribers.

30. The system of claim 1, wherein said information regarding said subscribers location and said subscribers data is further used to manage a communication service selected from the group including at least chatting, audio and audiovisual direct communication link between said subscribers.

31. The system of anyone of the preceding Claims wherein said information regarding said subscribers location and said subscribers data is further used to manage a game club , said game club being the community zone

of various game players using the system ,said game club has at least one feature of:

(a) find online game partners – based on location, or not;

(b) subscribe for the SMS update service – the user will receive SMS messages with info, suggestions and news about games;

(c) read game news;

(d) online chat – about games; and

(e) game forums.

32. The system of anyone of the preceding Claims wherein said information regarding said subscribers location and said subscribers data is further used to conduct and manage a treasure hunt electronic game.

33. The system of anyone of the preceding Claims, wherein said information regarding said subscribers location and said subscribers data is further used to conduct and manage a mobile terminal based electronic monopoly game for purchasing and management of real estate properties.

34. The system of claim 1, wherein said information regarding said subscribers location and said subscribers data is further used to conduct and manage any one of location information based electronic adventure games, said selected adventure game will be selected from a group including at least one of fighting adventures , fantasy adventures and detective adventures

games.

35. The system of claim 34, wherein said game players will create the adventures using a management console which is a game management tool, said console supplied to said system users for said game parameters definition and is available to said system users through a dedicated Internet web site.

36. The system of claim 34, wherein said game player can play with a pre-selected group of players selected from several player group options, including the whole cellular registered users community, a groups of friends and a single specific player.

37. A communication system for determining the location of users and for further using the users' location information for the generation and transmission of data required by at least one of a plurality of users sharing common interests, comprising:

(a) a wireless communication network;

(b) a plurality of user terminals providing wireless communication capabilities through said wireless communication network; each terminal is configured at least to generate a query and for further transmission of said query to a query processor apparatus; said user terminal is further configured to receive from said query apparatus query results and providing them as an output;

(c) the query processor apparatus being responsive to said query for processing said query on the basis of at least:

(i) information regarding users' location provided from a user location apparatus; and

(ii) subscribers data including registered users peers list and preferences stored in a subscribers database.

the system of claim 1, wherein said query is at least one selected from the group comprising of at least, requesting information regarding at least the location of a user's peers, requesting information from said subscribers database on selected users and peers and updating information within the system.

38. A communication method for determining the location of users and for further using the users location information for the generation and transmission of communication data required by at least one of a plurality of users sharing common interests, comprising:

(a) receiving a query from a user terminal;

(ii) processing said query to obtain query results on the basis of at least information regarding user's location users peers list and preferences; and

(c) outputting said query results to said user.

39. A communication method for determining the location of users and for further using the users location information for the generation

and transmission of communication data required by at least one of a plurality of users sharing common interests, comprising:

(a) receiving a query from a user terminal;

(b) processing said query to obtain query results on the basis of at least information regarding user's location users peers list and preferences;

(c) outputting said query results to said user; and

(d) conducting and managing a treasure hunt electronic game utilizing at least said users location.

40. A communication method for determining the location of users and for further using the users location information for the generation and transmission of communication data required by at least one of a plurality of users sharing common interests, comprising:

(a) receiving a query from a user terminal;

(b) processing said query to obtain query results on the basis of at least information regarding user's location users peers list and preferences; and

(c) outputting said query results to said user; and

(d) conducting and managing a mobile terminal based electronic monopoly game for purchasing and management of real estate properties game utilizing at least said users location.

41. A communication method for determining the location of users and for further using the users location information for the generation and transmission of communication data required by at least one of a plurality of users sharing common interests, comprising:

(a) receiving a query from a user terminal;

(b) processing said query to obtain query results on the basis of at least information regarding user's location users peers list and preferences; and

(c) outputting said query results to said user; and

(d) conducting and managing any one of location information based electronic adventure games, said selected adventure game will be selected from a group including at least one of fighting adventures , fantasy adventures and detective adventures, utilizing at least said users location.

42. A computer program comprising computer program code means for performing all the steps of Claims 39 when said program is run on a computer.

43. A computer program comprising computer program code means for performing all the steps of Claims 40 when said program is run on a computer.

44. A computer program comprising computer program code means for performing all the steps of Claims 41 when said program is run on a computer.

45 A computer program as claimed in Claim 39 embodied on a computer readable medium.

46 A computer program as claimed in Claim 40 embodied on a computer readable medium.

47 A computer program as claimed in Claim 41 embodied on a computer readable medium.

48 The method according to Claim 32 and wherein the game is conducted in the following steps:

(a) an electronic message containing a riddle is sent to a group of subscribers defined as participants directing them to a specific destination in the game territory;

(b) in order to advance in the game, said participants must reach said destination, where said participants will get another riddle, directing them to another destination;

(c) when a participant reaches a destination, he activates a 'find' command in his mobile terminal

(d) the system locates a participant through said system location server and updates his location in said system database;

(e) the system sends the participant a next clue after it identifies that the participant is in the right location; and

(f) a participant progresses from destination to destination in the game territory until said participant reaches the last destination where he could find the treasure and win it.

49. The method according to Claim 33, and wherein the game is conducted in the following steps:

(a) a player walks in the city, he can perform present ownership check on the place he is standing at the moment by first extracting location data from the system location server through his mobile terminal;

(b) said check can provide a result selected from the group including : the area is available and the player can buy it and the area has already been bought and the player must pay rent to the owner;

(c) in case said player pays a rent, said player can try and take over the place by challenging the owner to a trivia/boxing fight;

(d) the winner gets the area; and

(e) the final game winner is the one with most assets at a predefined point of time

50. The method according to Claim 34 and wherein the selected game is conducted in the following steps:

(a) said selected game players create their own character; define their skills and preferences;

(b) said game players have a mission to complete using their adopted character by choosing at least one of the group of play mode options including an option wherein there are ready-made missions that the players will be able to play and an option wherein the players will have the tools, using the Internet as the communication network with the system manager, to create their own adventures and further to publicize and conduct them with other system users.

(c) said game players to move from place to place in a defined geographic area, wherein said players pick items and information;

(d) said game players using their skills, information and the items they picked to interact with other players, said interaction element is at least one selected from the group including searching, talking, negotiating and fighting with the other game players; and

(e) said game players finish their mission, in more than one possible way.

51. The system according to Claim1, wherein said data communication bus is coupled to at least billing unit.

52. For use in a system according to anyone of the preceding system claims, a user terminal.

53. For use in a system according to anyone of the preceding system claims, a query processor.

54. For use in a system according to anyone of the preceding system claims, a user location device.

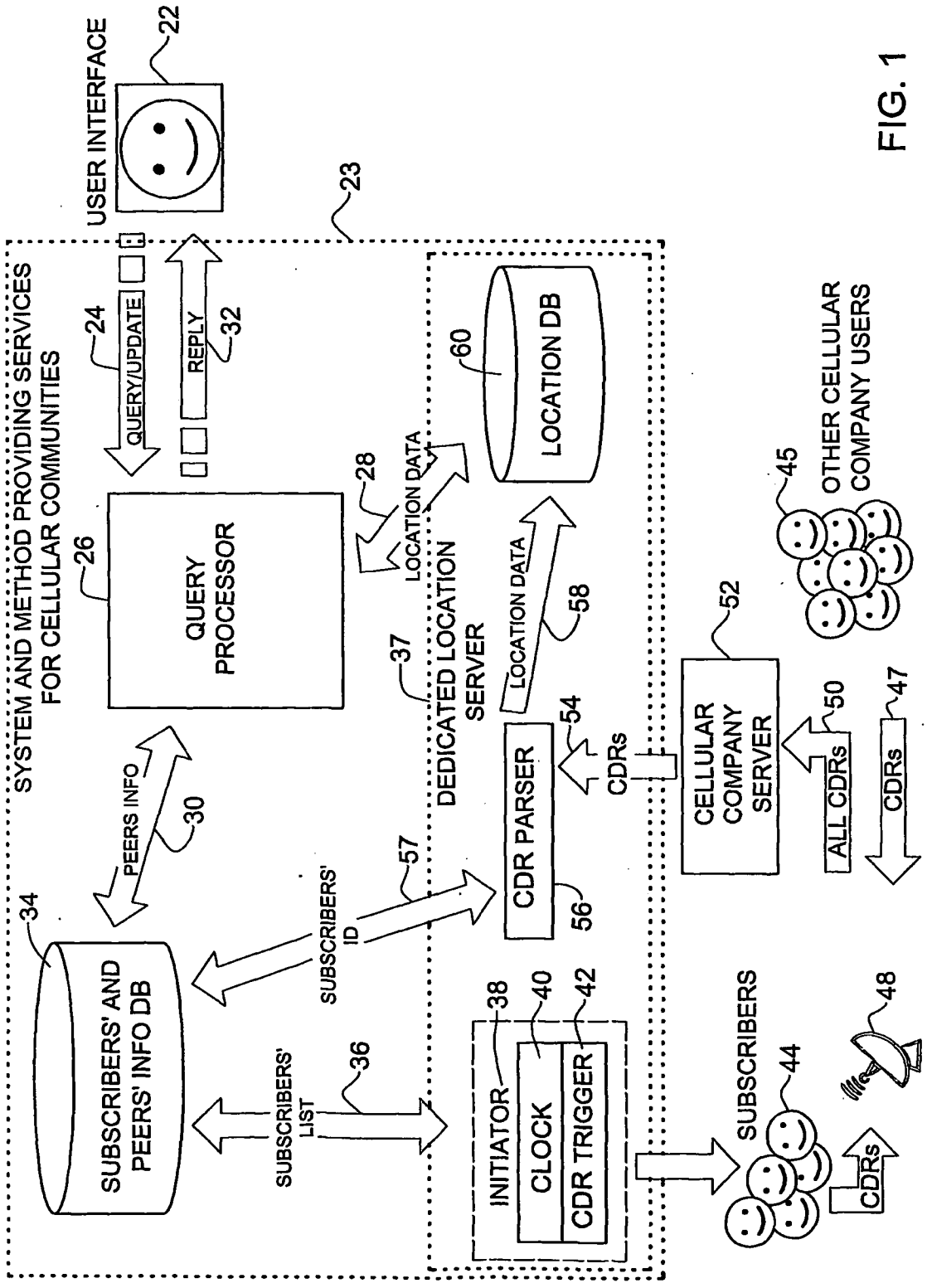
USER INTERFACE
22
23
SYSTEM AND METHOD PROVIDING SERVICES FOR CELLULAR COMMUNITIES
24
QUERY/UPDATE
REPLY
32
26
QUERY PROCESSOR
28
LOCATION DATA
60
LOCATION DB
37
DEDICATED LOCATION SERVER
58
LOCATION DATA
45
OTHER CELLULAR COMPANY USERS
52
CELLULAR COMPANY SERVER
PEERS INFO
30
34
SUBSCRIBERS' AND PEERS' INFO DB
SUBSCRIBERS' ID
57
CDR PARSER
54
CDRs
56
ALL CDRs
50
CDRs
47
SUBSCRIBERS' LIST
36
INITIATOR
38
CLOCK
40
CDR TRIGGER
42
SUBSCRIBERS
44
48
CDRs

FIG. 1

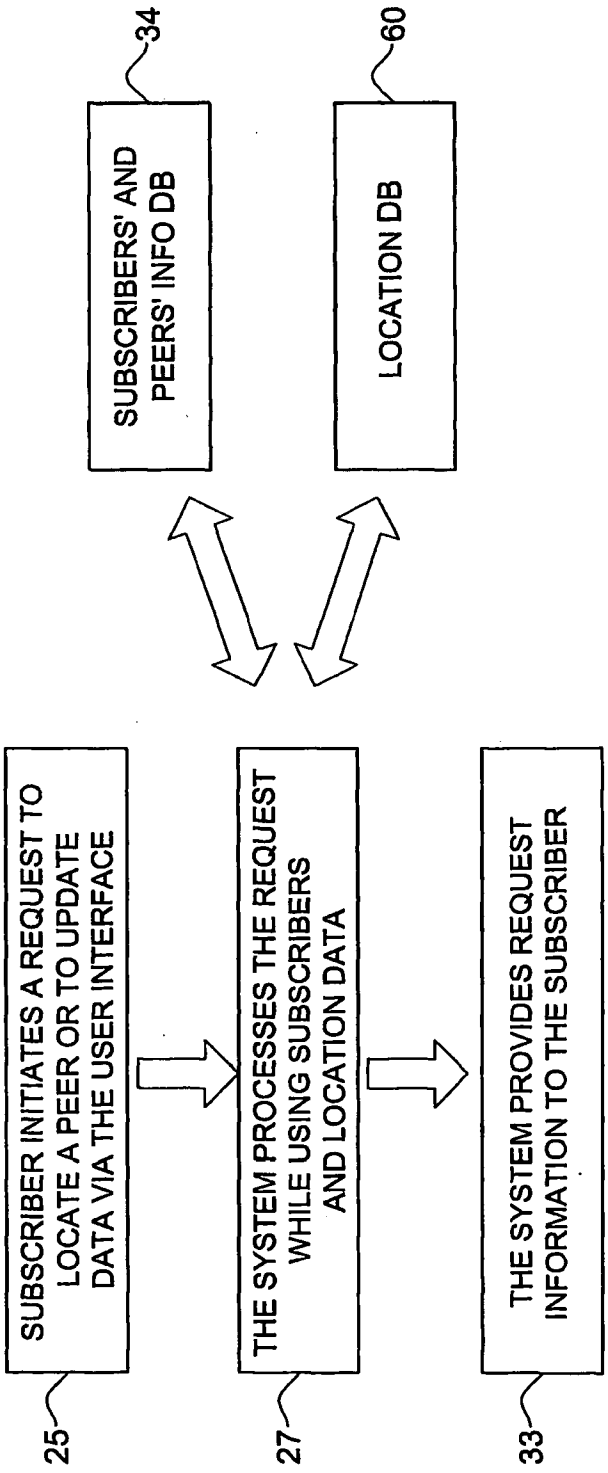
34
SUBSCRIBERS' AND PEERS' INFO DB
60
LOCATION DB
SUBSCRIBER INITIATES A REQUEST TO LOCATE A PEER OR TO UPDATE DATA VIA THE USER INTERFACE
THE SYSTEM PROCESSES THE REQUEST WHILE USING SUBSCRIBERS AND LOCATION DATA
THE SYSTEM PROVIDES REQUEST INFORMATION TO THE SUBSCRIBER
25
27
33

FIG. 2

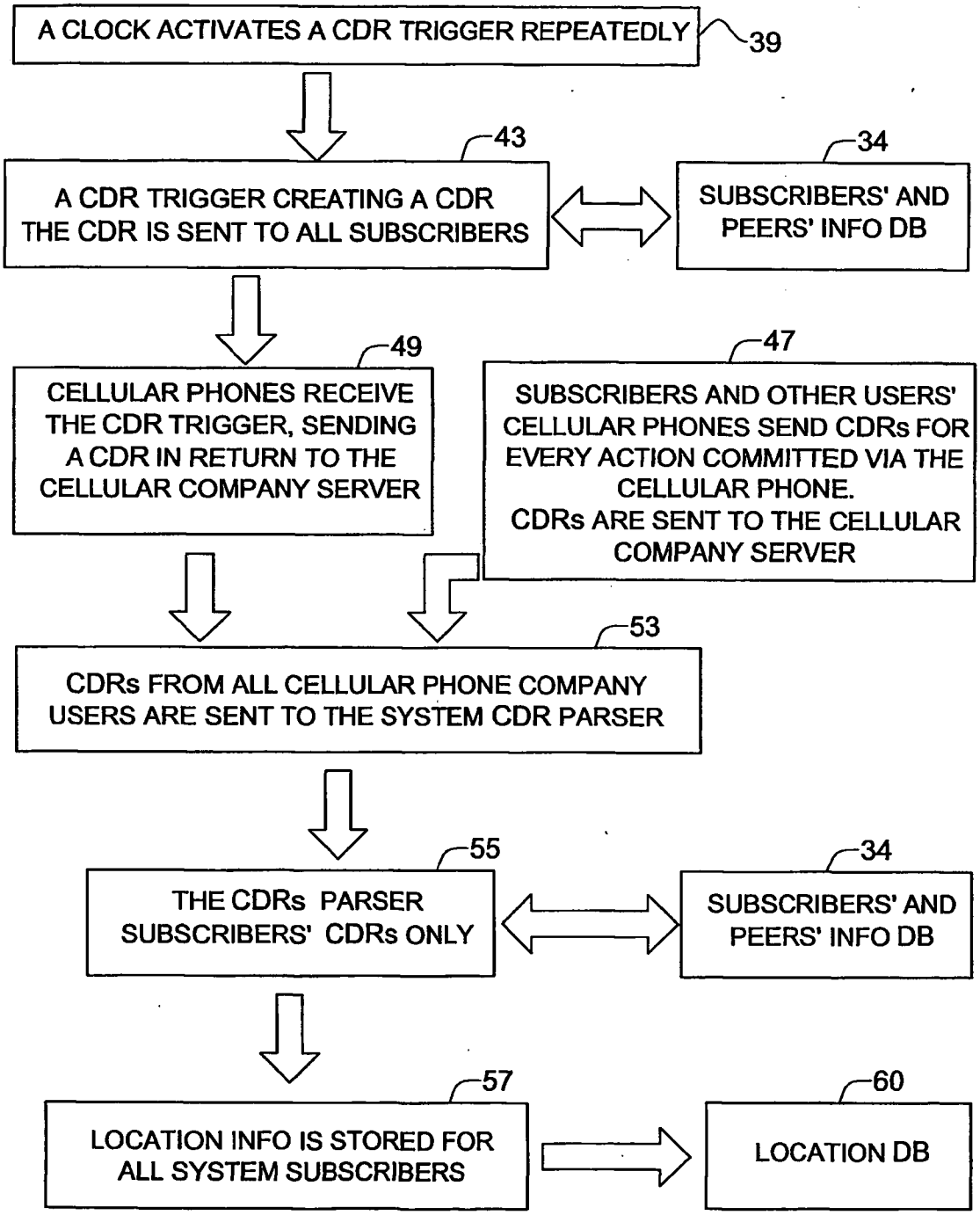
A CLOCK ACTIVATES A CDR TRIGGER REPEATEDLY
39
43
A CDR TRIGGER CREATING A CDR
THE CDR IS SENT TO ALL SUBSCRIBERS
34
SUBSCRIBERS' AND PEERS' INFO DB
49
CELLULAR PHONES RECEIVE THE CDR TRIGGER, SENDING A CDR IN RETURN TO THE CELLULAR COMPANY SERVER
47
SUBSCRIBERS AND OTHER USERS' CELLULAR PHONES SEND CDRs FOR EVERY ACTION COMMITTED VIA THE CELLULAR PHONE.
CDRs ARE SENT TO THE CELLULAR COMPANY SERVER
53
CDRs FROM ALL CELLULAR PHONE COMPANY USERS ARE SENT TO THE SYSTEM CDR PARSER
55
THE CDRs PARSER SUBSCRIBERS' CDRs ONLY
34
SUBSCRIBERS' AND PEERS' INFO DB
57
LOCATION INFO IS STORED FOR ALL SYSTEM SUBSCRIBERS
60
LOCATION DB

FIG. 3

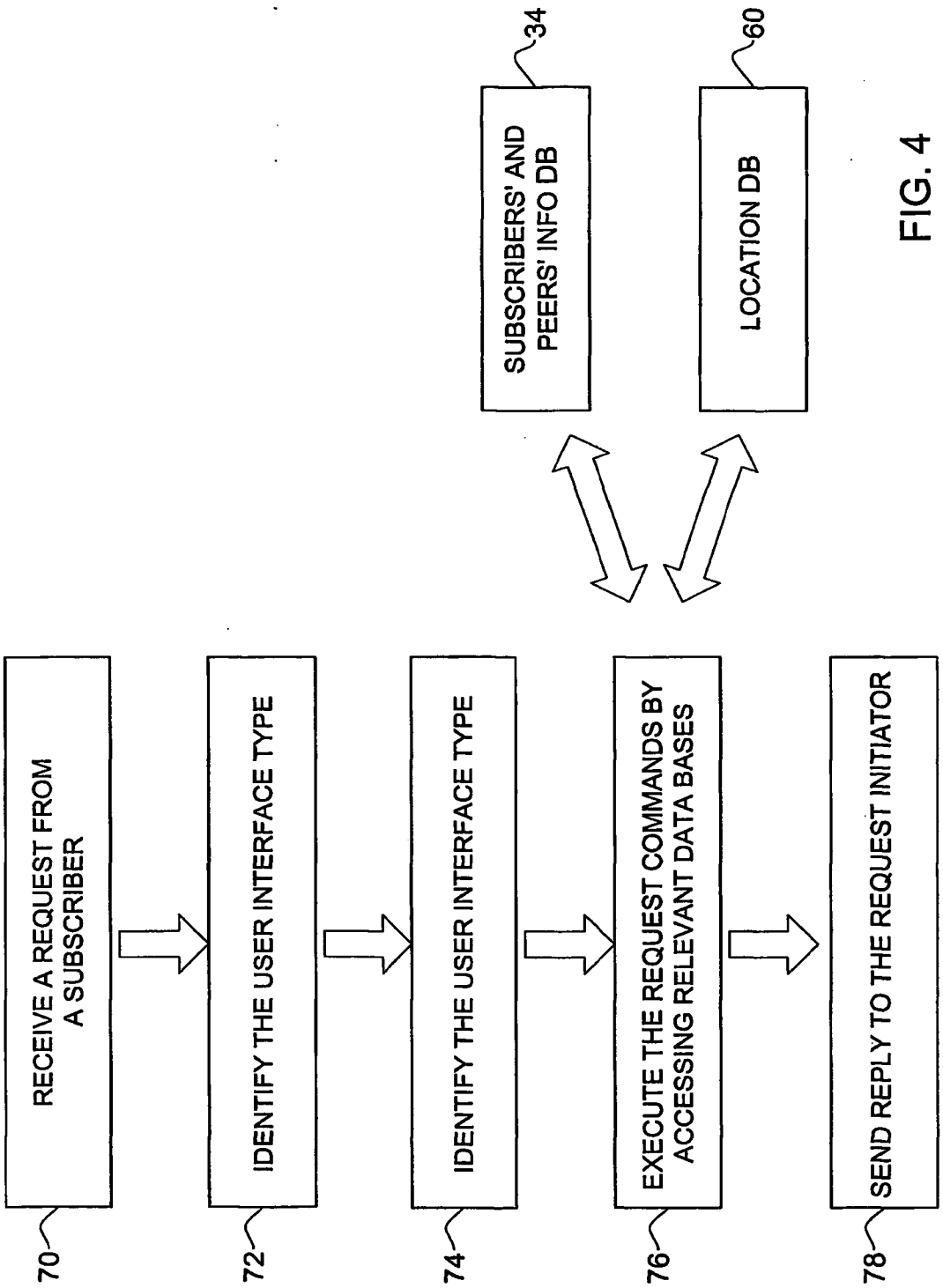
RECEIVE A REQUEST FROM A SUBSCRIBER
IDENTIFY THE USER INTERFACE TYPE
IDENTIFY THE USER INTERFACE TYPE
EXECUTE THE REQUEST COMMANDS BY ACCESSING RELEVANT DATA BASES
SEND REPLY TO THE REQUEST INITIATOR
70
72
74
76
78
SUBSCRIBERS' AND PEERS' INFO DB
LOCATION DB
34
60

FIG. 4

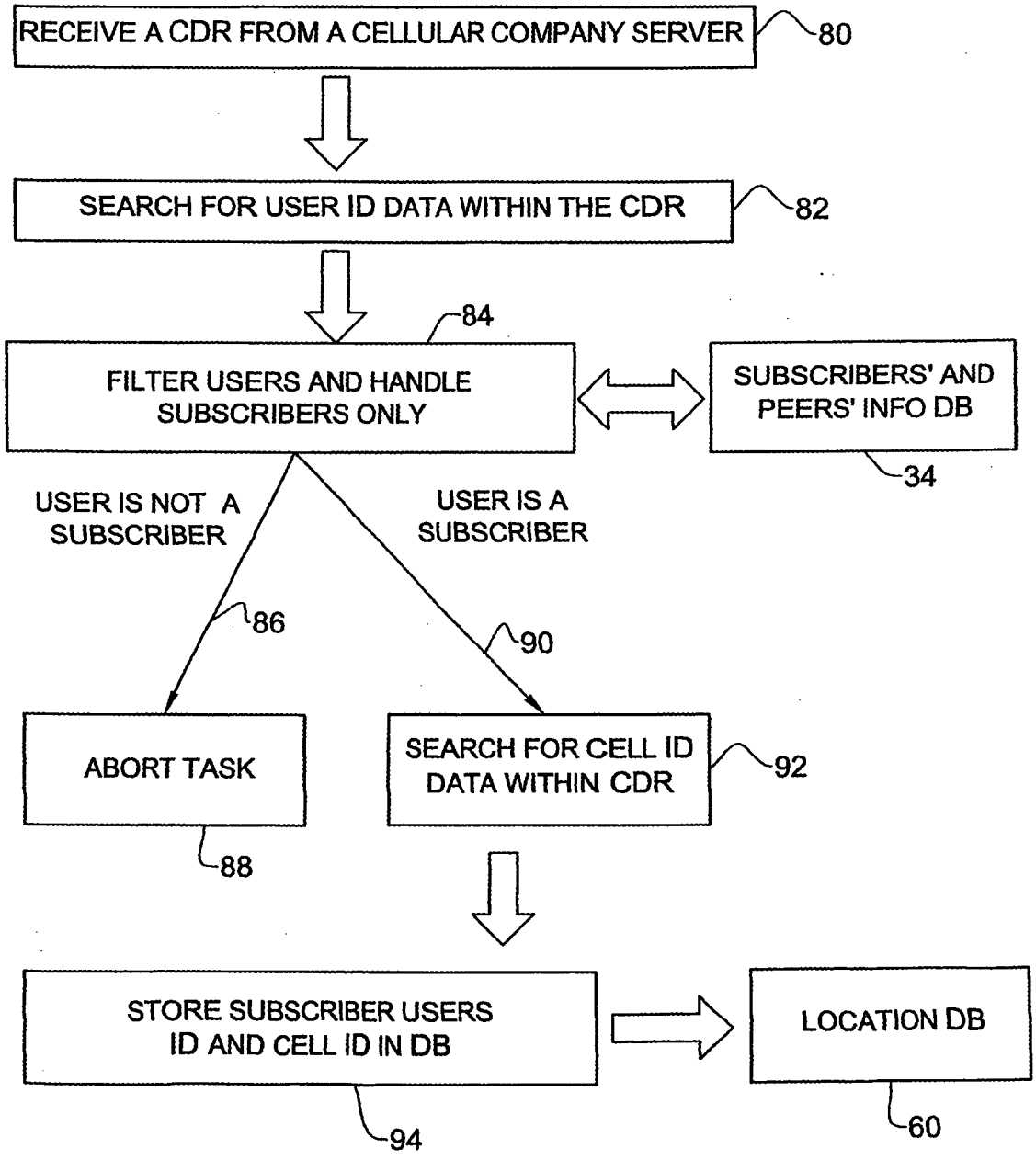
RECEIVE A CDR FROM A CELLULAR COMPANY SERVER
80
SEARCH FOR USER ID DATA WITHIN THE CDR
82
84
FILTER USERS AND HANDLE SUBSCRIBERS ONLY
SUBSCRIBERS' AND PEERS' INFO DB
34
USER IS NOT A SUBSCRIBER
USER IS A SUBSCRIBER
86
90
ABORT TASK
88
SEARCH FOR CELL ID DATA WITHIN CDR
92
STORE SUBSCRIBER USERS ID AND CELL ID IN DB
94
LOCATION DB
60

FIG. 5

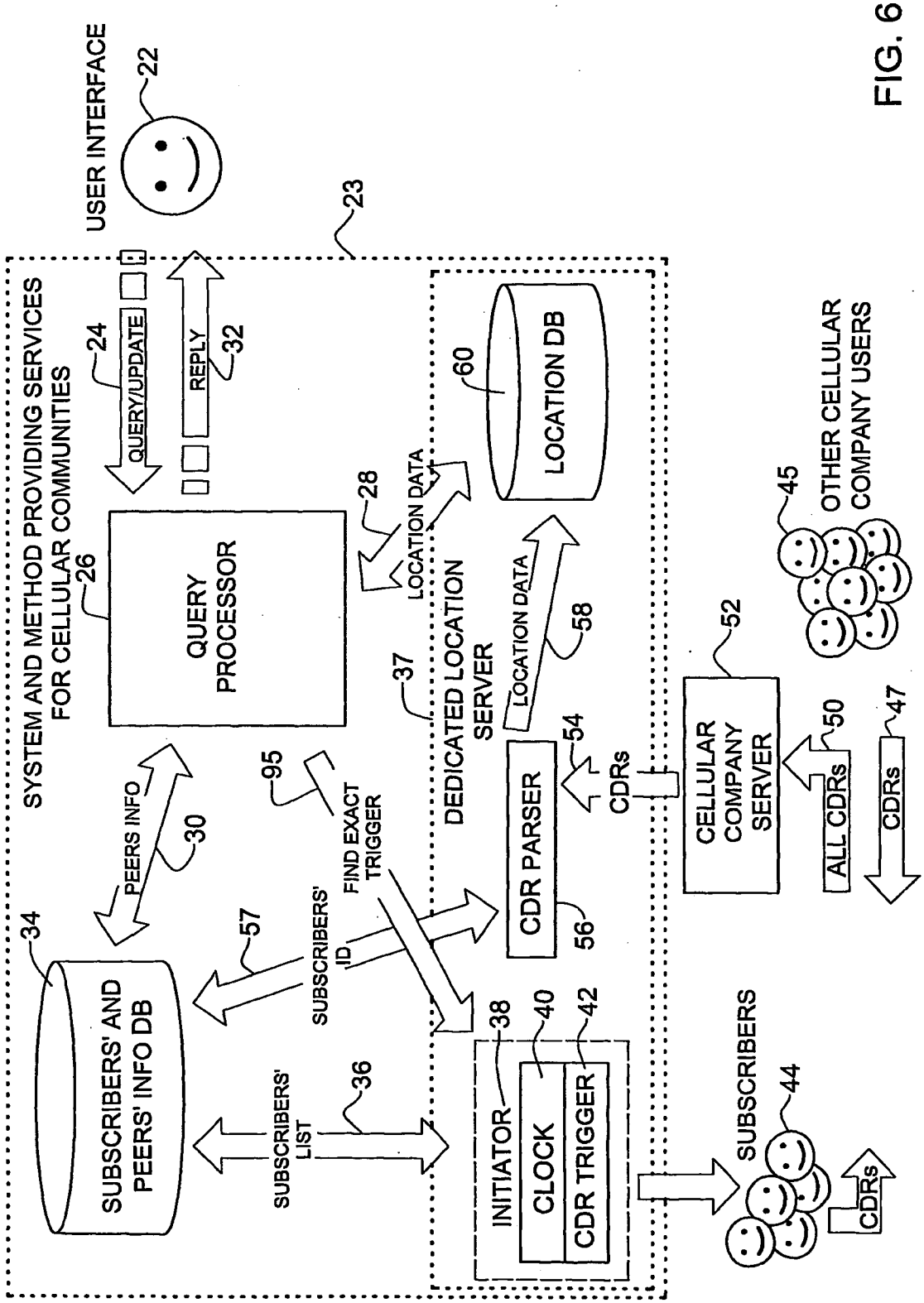
USER INTERFACE
22
23
SYSTEM AND METHOD PROVIDING SERVICES FOR CELLULAR COMMUNITIES
24
QUERY/UPDATE
REPLY
32
QUERY PROCESSOR
26
28
LOCATION DATA
60
LOCATION DB
DEDICATED LOCATION SERVER
37
LOCATION DATA
58
45
OTHER CELLULAR COMPANY USERS
52
CELLULAR COMPANY SERVER
50
ALL CDRs
47
CDRs
PEERS INFO
30
95
FIND EXACT TRIGGER
CDR PARSER
54
CDRs
56
34
SUBSCRIBERS' AND PEERS' INFO DB
57
SUBSCRIBERS' ID
SUBSCRIBERS' LIST
36
INITIATOR
38
CLOCK
40
CDR TRIGGER
42
SUBSCRIBERS
44
CDRs

FIG. 6

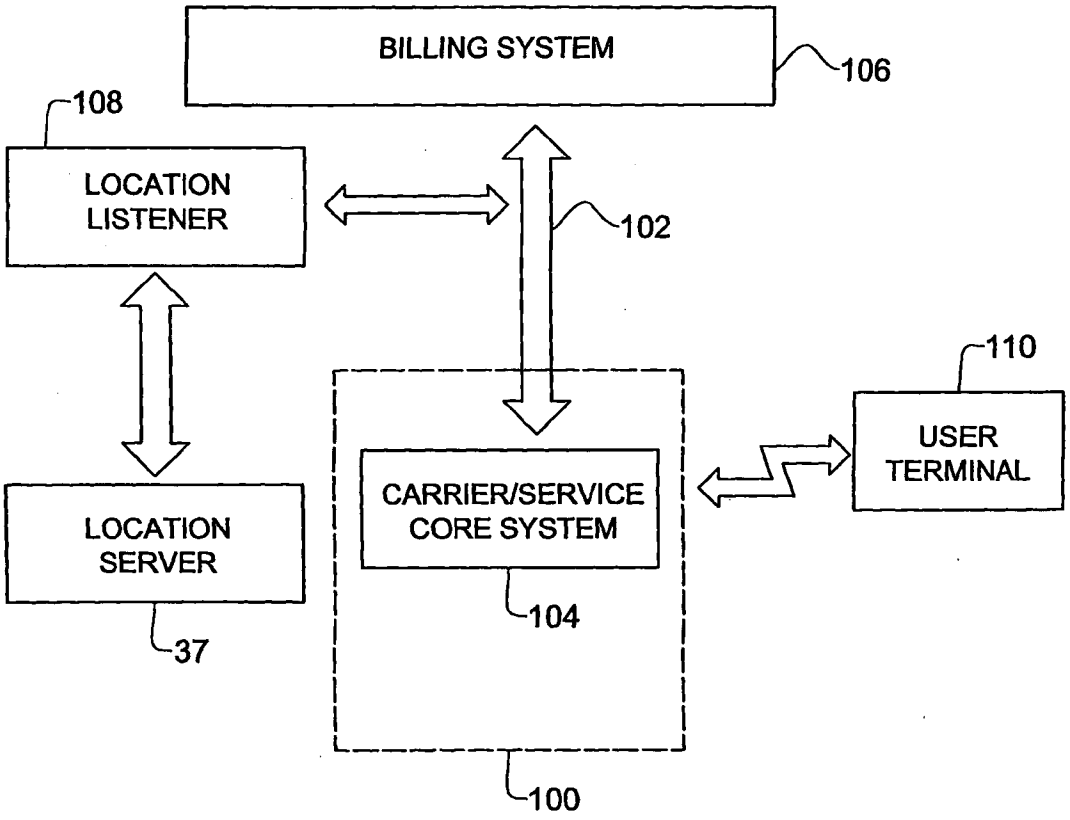
BILLING SYSTEM
106
108
LOCATION LISTENER
102
110
USER TERMINAL
CARRIER/SERVICE CORE SYSTEM
LOCATION SERVER
104
37
100

FIG. 7

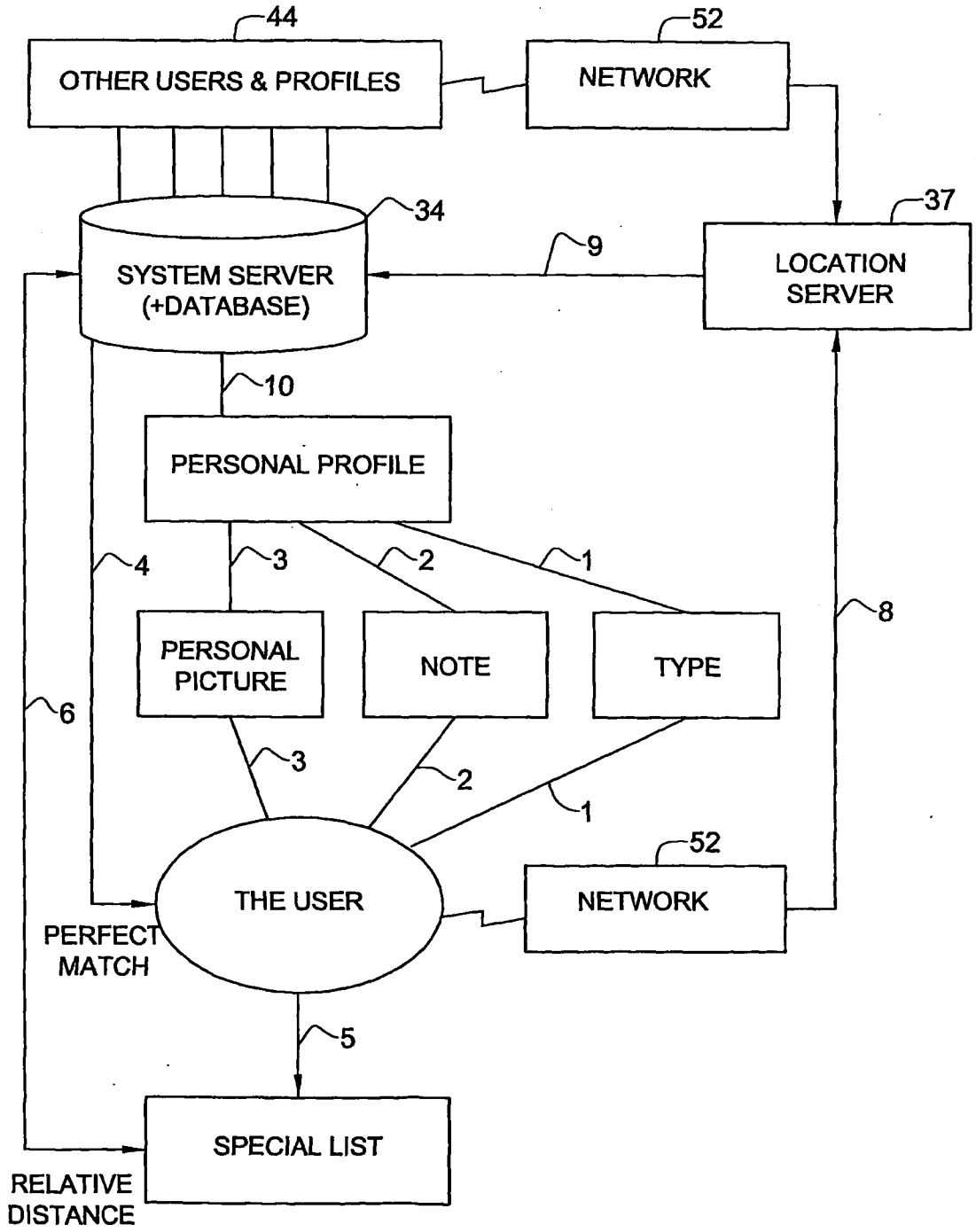
44
OTHER USERS & PROFILES
52
NETWORK
34
SYSTEM SERVER
(+DATABASE)
9
37
LOCATION
SERVER
10
PERSONAL PROFILE
4
3
2
1
8
PERSONAL
PICTURE
NOTE
TYPE
6
3
2
1
52
THE USER
NETWORK
PERFECT
MATCH
5
SPECIAL LIST
RELATIVE
DISTANCE

FIG. 8

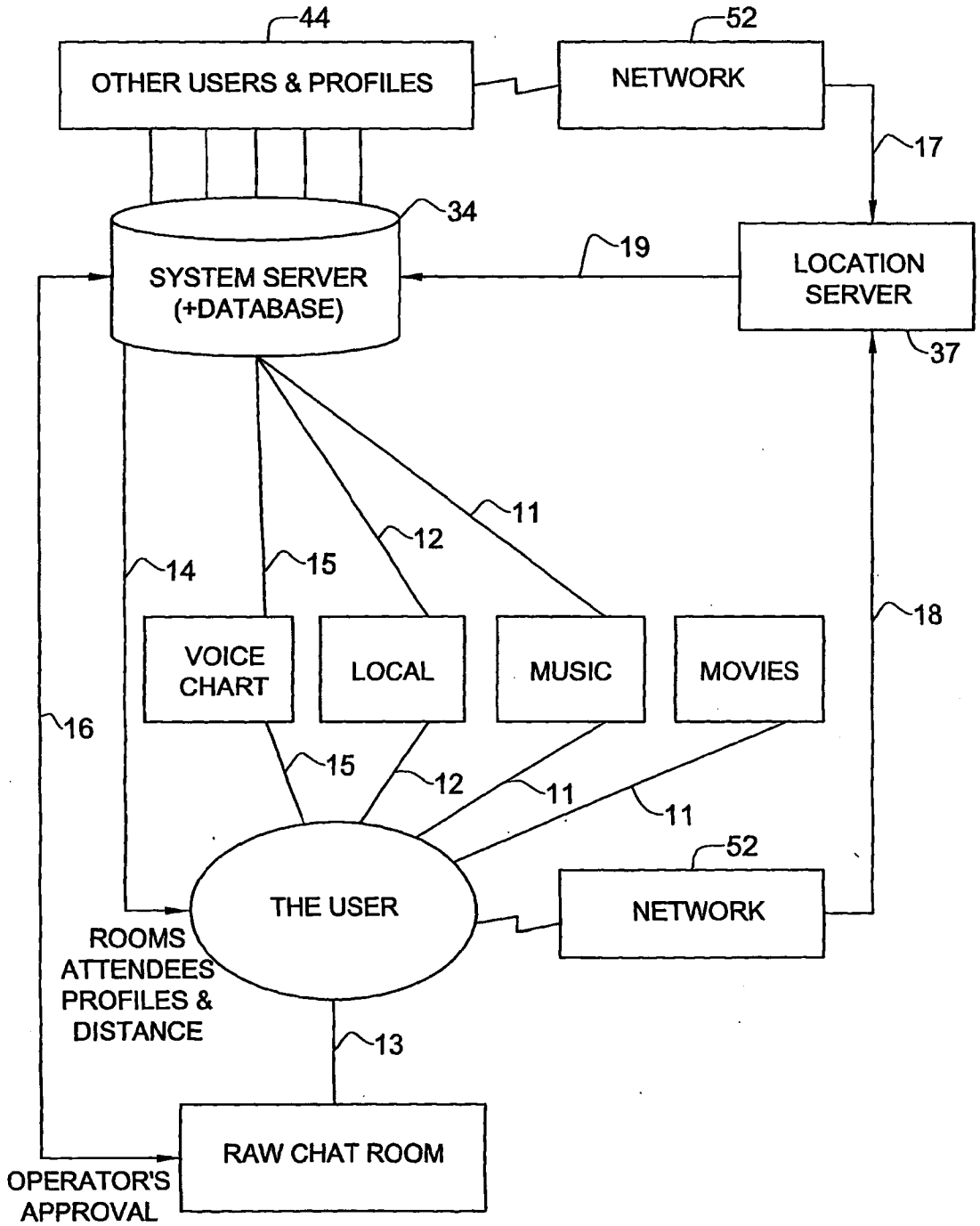
44
OTHER USERS & PROFILES
52
NETWORK
17
34
SYSTEM SERVER
(+DATABASE)
19
LOCATION
SERVER
37
11
12
14
15
18
VOICE
CHART
LOCAL
MUSIC
MOVIES
16
15
12
11
11
52
THE USER
NETWORK
ROOMS
ATTENDEES
PROFILES &
DISTANCE
13
RAW CHAT ROOM
OPERATOR'S
APPROVAL

FIG. 9

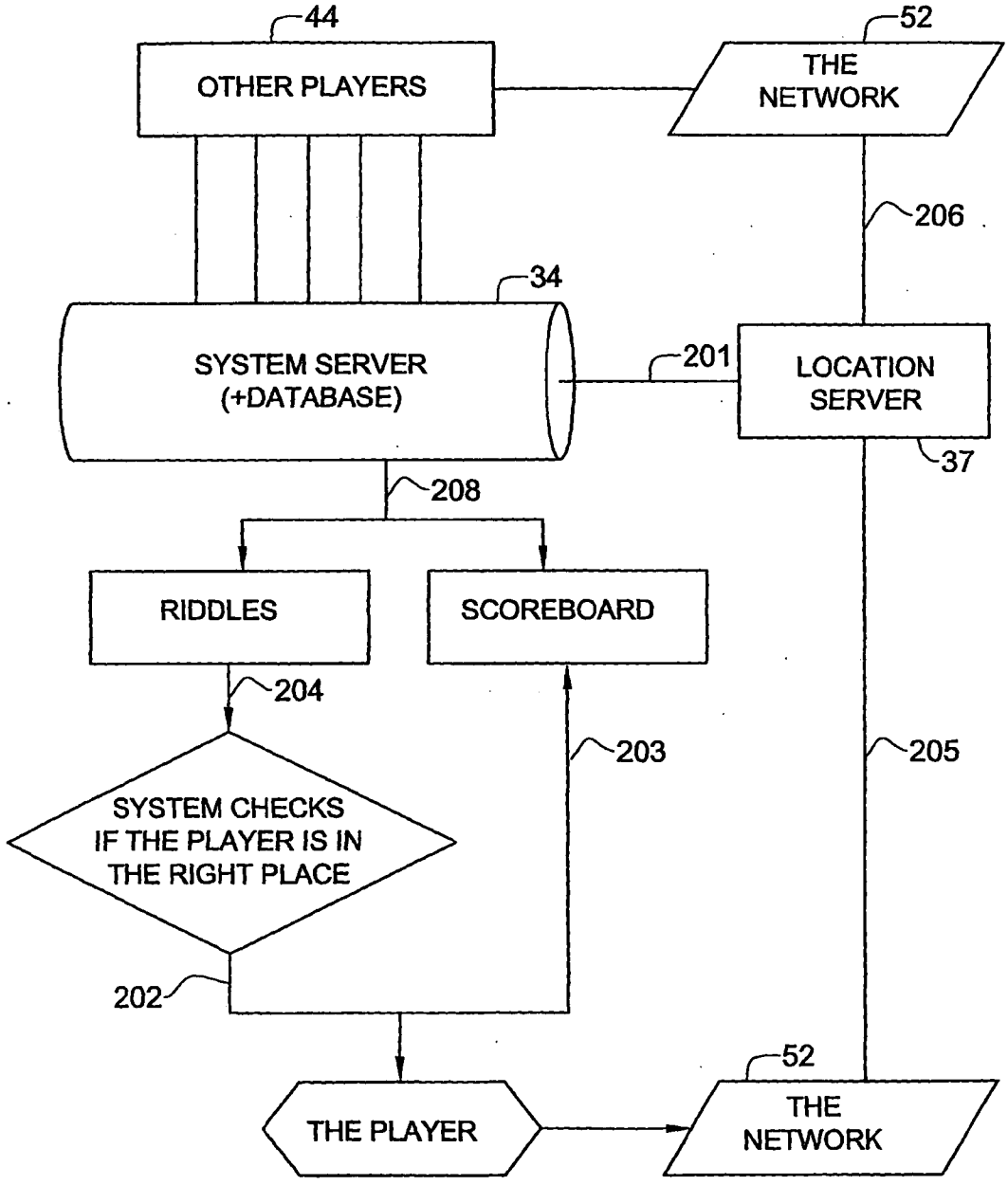
44
OTHER PLAYERS
52
THE NETWORK
206
34
SYSTEM SERVER (+DATABASE)
201
LOCATION SERVER
37
208
RIDDLES
SCOREBOARD
204
203
205
SYSTEM CHECKS IF THE PLAYER IS IN THE RIGHT PLACE
202
52
THE PLAYER
THE NETWORK

FIG. 10

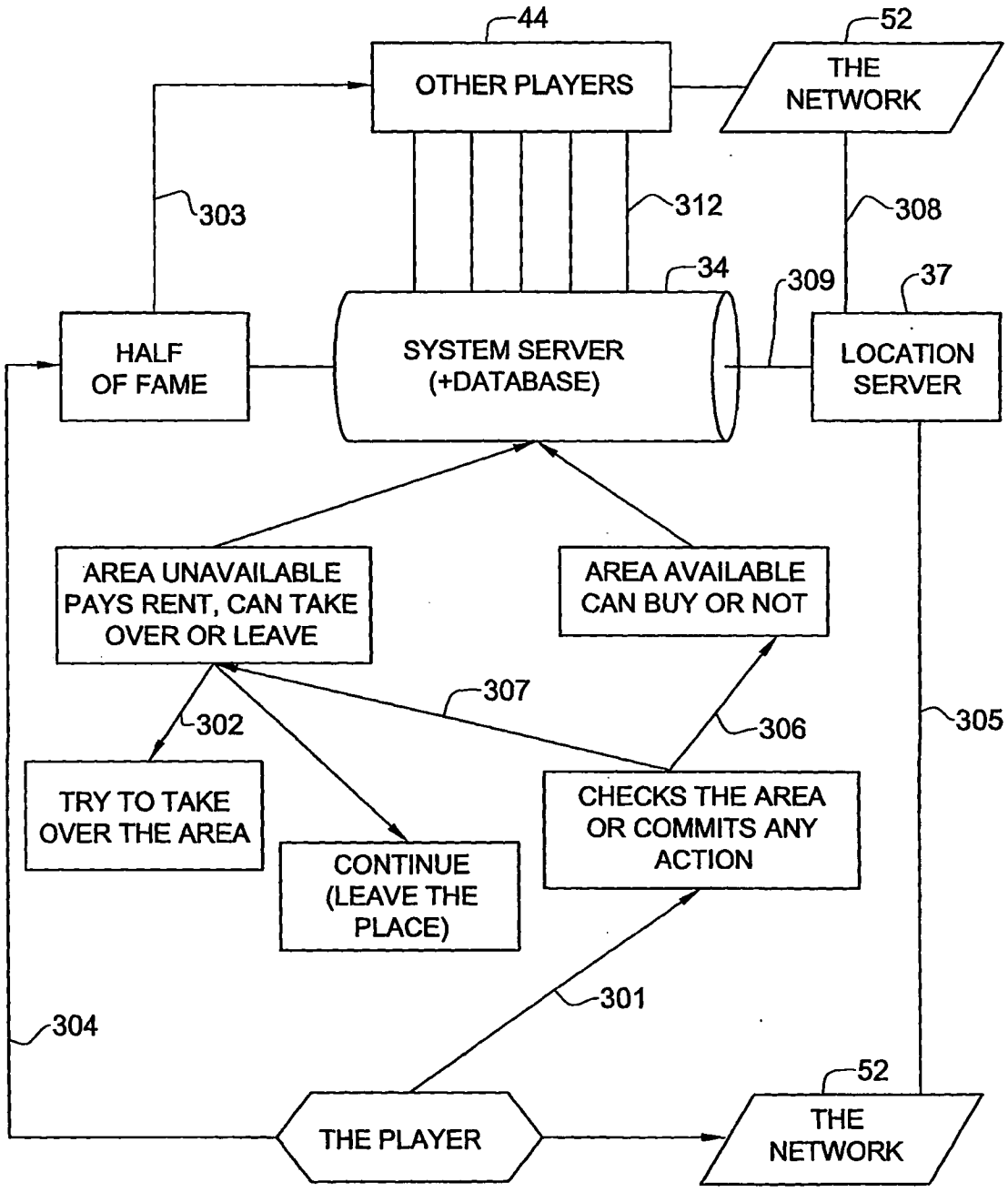
44
OTHER PLAYERS
52
THE NETWORK
303
312
308
34
309
37
HALF OF FAME
SYSTEM SERVER (+DATABASE)
LOCATION SERVER
AREA UNAVAILABLE PAYS RENT, CAN TAKE OVER OR LEAVE
AREA AVAILABLE CAN BUY OR NOT
307
302
306
305
TRY TO TAKE OVER THE AREA
CONTINUE (LEAVE THE PLACE)
CHECKS THE AREA OR COMMITS ANY ACTION
301
304
52
THE PLAYER
THE NETWORK

FIG. 11

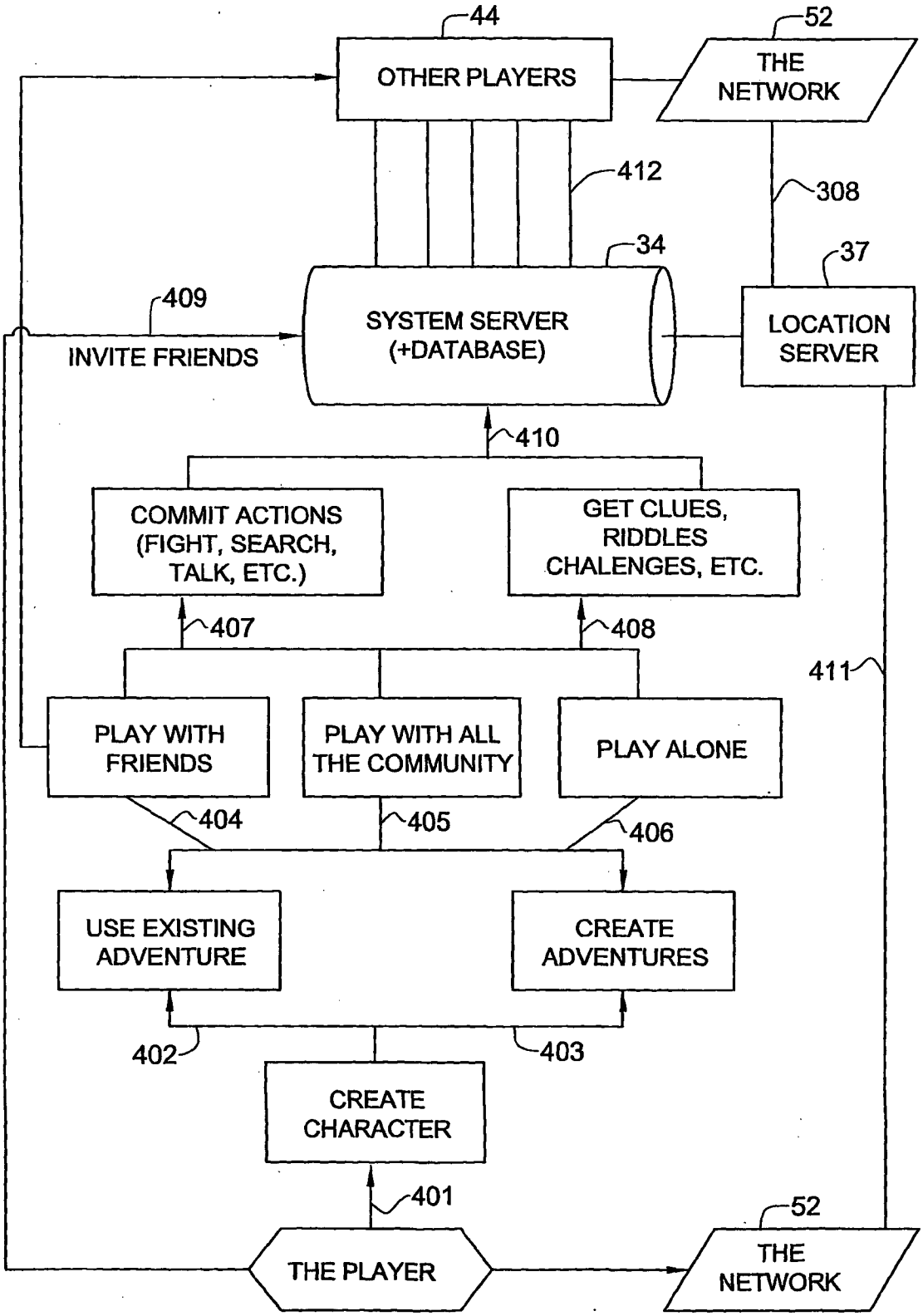
44
OTHER PLAYERS
52
THE NETWORK
412
308
34
37
409
INVITE FRIENDS
SYSTEM SERVER (+DATABASE)
LOCATION SERVER
410
COMMIT ACTIONS (FIGHT, SEARCH, TALK, ETC.)
GET CLUES, RIDDLES CHALENGES, ETC.
407
408
411
PLAY WITH FRIENDS
PLAY WITH ALL THE COMMUNITY
PLAY ALONE
404
405
406
USE EXISTING ADVENTURE
CREATE ADVENTURES
402
403
CREATE CHARACTER
401
52
THE PLAYER
THE NETWORK

FIG. 12

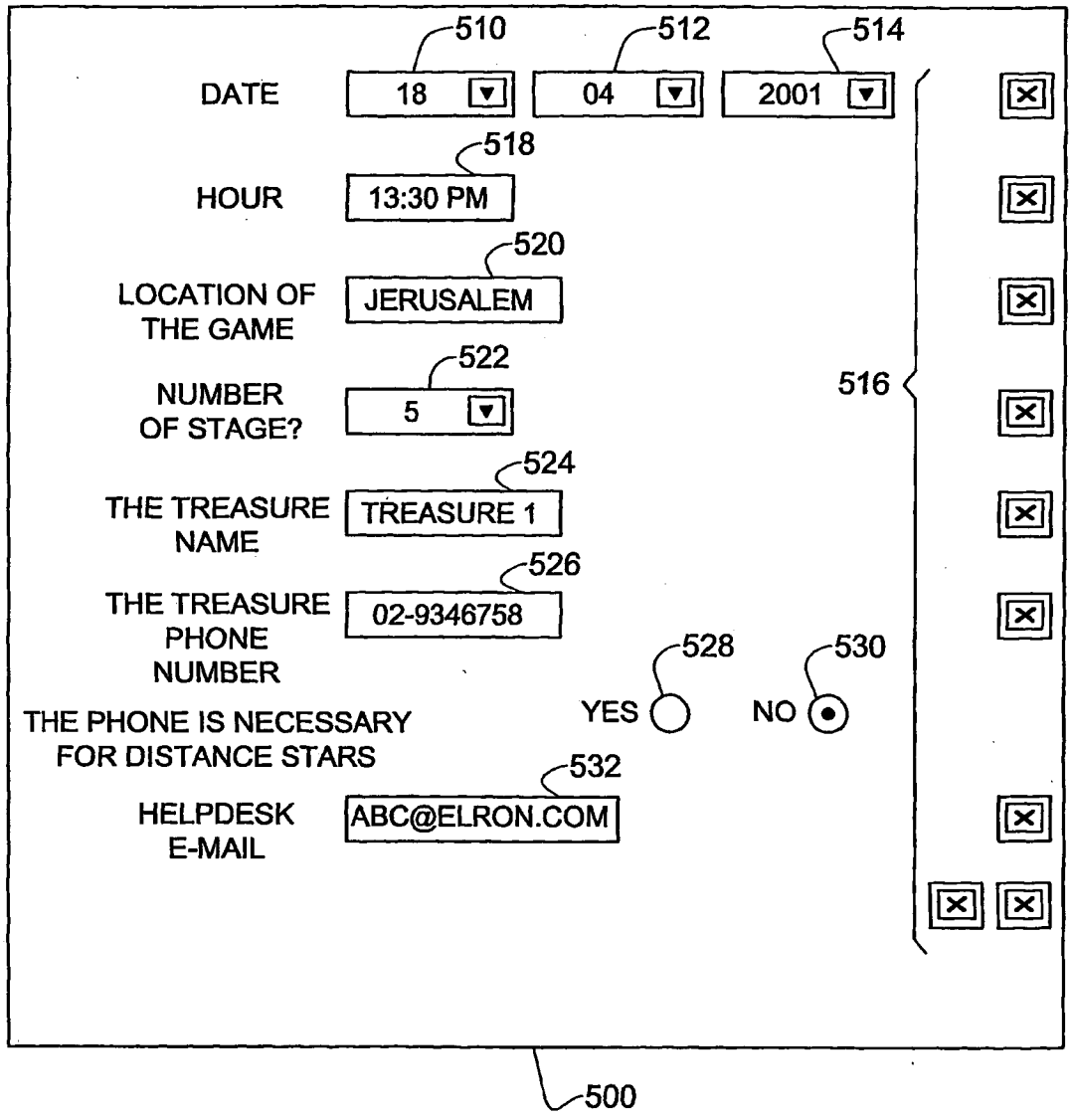
510
512
514
DATE
18
04
2001
518
HOUR
13:30 PM
520
LOCATION OF THE GAME
JERUSALEM
522
NUMBER OF STAGE?
5
516
524
THE TREASURE NAME
TREASURE 1
526
THE TREASURE PHONE NUMBER
02-9346758
528
530
YES
NO
THE PHONE IS NECESSARY FOR DISTANCE STARS
532
HELPDESK E-MAIL
ABC@ELRON.COM
500

FIG. 13